An Address
ON
THE GENERAL RELATION OF THE MOTOR NERVES TO THE TISSUES OF THE BODY.

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GENTLEMEN,—One might suppose that physiology, dealing as it does for the most part with structures—such as nerves and muscles and glands—which every one has and has heard of, would be eminently a science the newer aspects of which every one could readily understand. And in this supposition one would be encouraged by the frequency of the references in English literature to some part of our inner mechanism. More than a century and a quarter ago we find: "If 'tis wrote against anything, 'tis wrote an please your worships against the spleen, in order by a more frequent and more convulsive elevation and depression of the diaphragm, and the succussations of the intercostal and abdominal muscles in laughter, to drive the gall and other bitter juices from the gall-bladder, liver and sweet-bread of his Majesty's subjects with all the inimicitious passions which belong to them down into their duodenums."

In these days we are, perhaps, less free in our allusions to our component parts—though many speak in common talk with the familiarity of a friend of the eccentricities of their livers—but the rapidity with which physiological discoveries become matters of popular comment affords ground for belief that both knowledge of physiology and interest in it are wide-spread.

It must, however, be recognised that many subjects which are interesting to the physiologist either involve so much special knowledge or are so beset with technical terms that it is difficult to make clear to others even their general drift. I am not without uneasiness that my subject to-day may be found to fall within this category. I propose to consider some relations of the nerves which pass from the brain and spinal cord and convey impulses to the other tissues of the body—the motor or efferent nerves, and in especial the relations of those efferent nerves which run to the tissues over which we have little or no voluntary control. It is as well to say at once that none of the general conclusions which I put before you are encrusted with universal acceptance. One or two have been subjects of controversy for the last 50 years, others are too young to have met even with contradiction. I do not propose to give you an account of the various theories which have been put forward on the questions I touch upon, nor do I propose to point out how far the views I advocate are due to others. I am only concerned to state what seems to me to be the most probable view with regard to certain problems which have been been emerging from obscurity in recent years.

LIMITATIONS IN THE CONTROL OF THE NERVOUS SYSTEM OVER THE TISSUES OF THE BODY.

The conspicuous manner in which nervous impulses affect every-day life is apt, perhaps, to make us over-estimate the character and range of the influence exercised directly by the nervous system.

From the early part of this century one way of regarding the body has been to consider it as made up of tissues grouped together in varying number and amount. Each tissue has its characteristic features under the microscope. We need not enter into the question as to which of the commonly recognised tissues of the body are to be regarded as forming a class by themselves and which are to to be regarded as subdivisions of a class. The point I wish to lay stress on is that in any broad classification, *not more than two tissues are known to be supplied with approximate completeness with efferent nerve-fibres.* The striated muscular tissue, which forms, amongst other parts of the body, the muscles of the limbs and trunk, receives in all regions nerve-fibres from the brain or spinal cord. And the unstriated muscular tissue, which forms, amongst other parts of the body, the contractile portion of the alimentary canal and of the blood-vessels, is in nearly, and possibly in all, regions similarly supplied. With the other constituents of the body the case is different. The glandular division of epithelial tissue, it is true, in some parts responds promptly and strikingly to nervous impulses, but in some parts the response is feeble, and in others no nervous impulse has been shown to have any effect.

The connective tissue which exists all over the body and which in its varied forms of connective tissue proper, cartilage, bone, teeth, epithelioid cells, makes so considerable a part of it, is, in mammals, so far as we know, destitute of efferent nerve-fibres. The epidermic cells, which form a covering for the body, the ciliated cells, the reproductive cells, do not visibly respond to any nerve stimulus. And the myriads of blood corpuscles, which in different ways are in incessant action for the general welfare, are naturally out of range of nervous impulses. According to our present state of knowledge, large portions of the organism live their own lives uninfluenced, except indirectly, by the storms and stresses of the central nervous system. No nervous impulse can pass to them to make them contract or to make them secrete, or to quicken or slacken their inherent activity. The nervous system can only influence them through the medium of some other tissue by changing the quantity or quality of the surrounding fluid. Regarding, then, the body from the point of view of the control exercised by the nervous system on the other constituents, we have first to recognise that this is in considerable part indirect only, that the several tissues are in varying degree under direct control—a control dropping to suzerainty or even to convention—and that different parts of one tissue may be influenced by the nervous system to different extents.

LIMITATION IN THE CONTROL OF THE NERVOUS SYSTEM OVER THE DIFFERENT ACTIVITIES OF THE CELL.

Even when nervous impulses can strikingly affect the vital activity of a tissue their action is limited. They cannot modify the activity in all the various ways in which it is modified by the inherent nature of the tissue and the character of the surrounding fluid. Thus, the submaxillary gland which pours saliva into the mouth is in life ceaselessly taking in oxygen and giving out carbonic acid, it does this without pouring forth any secretion. So far as we know no nervous impulse can hasten or retard this customary life of the gland by a direct action upon it without producing other changes. The nervous impulse which reaches the gland cells causes them to secrete, to take up fluid on one side and to pour it out on the other, and it does not, and so far as we know cannot, confine its influence to those changes ordinarily going on in the gland cells. The *essential effect of a nerve-impulse* appears to be to modify the amount of energy set free as *work*; usually it causes work to be done, as in the contraction of a muscle or in the secretion of fluid by a gland; sometimes it diminishes the work done, as in the cessation of the heart-beat or the decrease of contraction of a blood-vessel. Other changes often go on side by side with this setting free of energy as work, but there is no unimpeachable instance in which these other changes take place by themselves as the result of nervous excitation. Physiologists have sought for long years in all parts of the body for nerves—calorific or frigorific nerves—which cause simply an increase or decrease of the heat set free by a tissue, and for nerves—trophic nerves—which cause simply chemical changes in the tissue associated with a setting free of heat or not. Probable as the existence of such nerves seems to be the search for them cannot, I think, be said to have been successful.

SOMATIC OR VOLUNTARY TISSUES.

When we look at the question of nervous control subjectively and consider in ourselves what tissues are at our beck and call, we find that we have immediate and prompt governance over one tissue only, the one which, as we have already seen, is most universally supplied with efferent nerve-fibres—namely, the (fibrous) striated muscular tissue. The parts of the body composed of this muscule we move, as we say, at will. We exercise a control over it that we cannot exercise over any other tissue. It is supplied with a special system of nerves. In other vertebrates there is a tissue of similar microscopical characters and having a similar system of nerves.

And we can be certain that in all vertebrates the fibrous striated muscle and the nervous system belonging to it form a definite portion of the body which can be properly placed in a class apart from the other tissues of the body. The tissues in this class are spoken of as "somatic" tissues, or sometimes, in view of our own sensations, as "voluntary." "Voluntary" is not a word which physiologists care much to use in this context because it readily gives rise to misconception. It will serve, however, if we bear in mind that the primary distinguishing characters of the system are microscopical, anatomical, and developmental; that other tissues than "voluntary" can be put in action by the will, though in a different fashion, and that "voluntary" tissues are also put in action involuntarily; that is to say, the word will serve if we rob it of much of its ordinary meaning. The somatic or voluntary nervous system has in its essential features long been known. We may leave it and pass on to a more obscure field.

AUTONOMIC OR INVOLUNTARY TISSUES.

In putting on one side the voluntary system you will notice that we have disposed of one only of the several tissues, differing microscopically from one another, which go to make up the various organs of the body. Of the rest, some, as we have said, either do not receive nerve-fibres from the brain and spinal cord, or if they do, practically nothing is known about them in our own class of vertebrates, the mammalia. These I shall say a word or two about later. For the present we must confine our attention to the tissues which are known to be supplied not too illiberally with nerve-fibres. These are unstriated muscle and its allied heart muscle and certain glands. Since the voluntary striated muscle has a nervous system of its own it might be imagined that the unstriated muscular tissue and the glandular tissues, differing widely as they do, would also have separate nervous systems. This, however, is not the case. The nervous supply of these two tissues has common features and belongs to the same systems. There is unfortunately no satisfactory term by which to designate it. On the whole, the term "autonomic" seems to me best adapted for scientific use. But it is not of the first importance for our present purpose to insist upon a proper nomenclature, so that I think I shall not do much harm if I use the familiar "involuntary" for the unknown, or nearly unknown, "autonomic."

I need hardly point out how widespread are both the glandular and the unstriated muscular tissues. In man practically the whole surface of the skin is supplied with sweat glands; lacrymal glands lie hid in the orbit, small glands are thick in the respiratory tract from the nose to the smaller bronchial tubes, and glands stretch along the whole of the digestive tract. Most of these can be set in action by nerve-fibres. There are a number of others in which such action has not been shown, so that they do not concern us at present. Unstriated muscle, forming, as it does, part of the walls of the arteries and veins, penetrates to every part of the body. It forms a large part of the coats of the stomach and intestines, it is present in the spleen and in parts of the lymphatic vessels, it is present in the iris and in other parts of the eye, and it occurs in greater or less amount in different animals in the deeper layer of the skin. Consider some of the ways in which these tissues in the several organs or structures affect the working of the body. The heart contracts and supplies the driving force for the circulation of the blood; the arteries contract less or more, here or there, and regulate the amount of the blood to each region; the digestive tract secretes solvent and disintegrating fluids on the food, churns it to pulp, absorbs some and rejects the rest; the skin glands pour out their tiny beads of perspiration and so aid in regulating the temperature of the body; the iris commands the aperture of the pupil and determines the amount of light falling on the retina, and the ciliary muscle, by its varying contraction, brings about the focussing necessary for distinct vision. But the involuntary tissues do not confine themselves to actions of such flagrant utility as those just mentioned. The contraction of small bundles of unstriated muscles in the skin will cause the flesh to creep. Other similar small muscles are attached to the hairs: 'tis these will make—

> "Thy knotted and combined locks to part,
> And each particular hair to stand on end
> Like quills upon the fretful porpentine."

The involuntary tissues, although not under the prompt and immediate control of the will, are under the control of the higher centres of the brain. They are particularly responsive to the emotions. And in so far as we can call up emotions we can play upon them at will. The ease with which nervous impulses pass along given tracts depends, amongst other things, upon use. And so it appears that our great-grandfathers wept and our great-grandmothers fainted with an ease which we should require assiduous practice to attain. Further, you may note that the contraction of involuntary muscle caused by an emotion may in its turn set up nervous impulses which pass back to the brain and give rise to vague and curious feelings—feelings often lending themselves to effective literary expression.

> "Where our heart does but relent, his melts; where our eye pities, his bowells *yearn*."

I must ask your forgiveness for mentioning so many well-known facts in the sketch which I have just given of the involuntary tissues. But I hope it will take from you all excuse for not understanding the rest of what I have to say.

THE ARRANGEMENT OF THE INVOLUNTARY NERVOUS SYSTEM

presents some peculiar characters. The most distinctive of these is that the nerves, after they leave the brain or spinal cord, do not run uninterruptedly to the periphery; they end in nerve cells and the nerve cells send off the fibres which run to the periphery. That this is so in many cases has long been known. It is, I think, universal. The most direct proof of it lies in the fact that a certain amount of nicotine prevents the central nervous system from having any influence on the peripheral structures—i.e., the line is somewhere blocked; it can be shown, speaking generally, that there is no block on either side of the groups of nerve-cells, so that it must be in them. The actual point of attack of the nicotine appears to be the connexions made by the central nerve-fibres with the peripheral nerve cells. Thus all nerve impulses which pass from the brain or spinal cord to unstriated muscle or glandular tissue—and probably to any autonomic structure whatever in all vertebrates—pass through an intermediate station on their way. In this, as in some other respects, the arrangement of the involuntary nervous system is more complex than that of the voluntary nervous system; in the latter the motor nerve fibres run direct to the tissue and have no nerve cells on their course. The nerve cells which form the intermediate stations for the involuntary nerve-fibres are grouped together into ganglia, and so we may call the nerve-fibres which run from the brain or spinal cord to the nerve-cells preganglionic fibres and the nerve-fibres which run from the ganglia to the peripheral tissues post-ganglionic nerve-fibres.

The involuntary nervous system is divided into at least two divisions. The most extensive of these is what is called the *sympathetic nervous system*. The pre-ganglionic fibres of the sympathetic arise from a limited portion of the spinal cord. They arise from that part of the spinal cord which is in the region of the chest and the small of the back—i.e., roughly from the part which lies between the origin of the voluntary nerves for the arms and the origin of the voluntary nerves for the legs. The fibres given off by the ganglia of this system—i.e., the post-ganglionic fibres—run to the involuntary tissue in all parts of the body.

THE CRANIAL AND SACRAL SYSTEM.

The second division of the involuntary nervous system forms an additional supply for certain portions of the body. It consists of two parts; one part—the cranial—arises from the brain—i.e., above the origin of the sympathetic; the other—the sacral—arises from the end of the spinal cord—i.e., below the origin of the sympathetic. Each supplies a limited and different part of the involuntary tissue of the body, but both together supply a portion only of it. Taking the distribution broadly they supply the muscular coats of the alimentary canal and certain structures connected developmentally with the anterior and posterior portions of this canal. They are especially connected with these anterior and posterior portions, they send numerous nerve-fibres to them, whereas they send but few to the intervening portion and none at all to its blood-vessels. Thus parts of the involuntary tissue of the body receive a double supply of nerve-fibres, whilst parts receive a single supply only. Amongst the latter are all the involuntary tissues of the skin, the blood-vessels of the limbs and trunk, and the blood-vessels of most of the viscera. The cranial

and sacral divisions of the involuntary nervous system are considered by some observers to be simply portions of the sympathetic system, separated from it by the development of the nerve-centres for the arms and for the legs. I may give one reason why I do not take this view.

The middle portion of the spinal cord, which is the region that sends fibres to the sympathetic, always sends fibres to a given spot by more than one nerve, and usually by four or five. The fibres passing by the several spinal nerves never differ in the kind of effect they produce, but only in the degree of effect; the difference is in quantity and never in quality. If, then, regions above and below were mere separated parts of this sympathetic region we should expect that when one of these regions and the sympathetic region send nerves to the same spot the effect produced by both sets of nerves would be the same in kind, though it might differ in extent. But this is often not the case. Thus certain blood-vessels may receive nerve-fibres from four spinal nerves in the sympathetic region and from three spinal nerves in the sacral region; all the former cause contraction of the blood-vessels, all the latter cause dilation. And thus it is probable that the cranial and sacral involuntary nerves belong to a different system from the sympathetic nerves. And there is reason to believe that the developmental history of the two has been different.

INHIBITION.

A striking feature of the involuntary nervous system is its possession of nerve-fibres which when excited stop some action at the time going on. The most striking example is, perhaps the cessation of the heart-beats brought about by exciting the vagus nerve. Such nerve-fibres are called inhibitory nerve-fibres and the stopping of the action is called inhibition. So far as has been definitely proved inhibitory nerve-fibres only run to involuntary muscle and to nerve-cells, and to these, so far as has been certainly shown, only in particular cases. It is true that when fear or other emotion causes the tongue to cleave to the roof of the mouth there is a cessation of the customary flow from certain glands, but this flow is itself the result of nervous impulses passing in ever rising and falling intensity from the central nerve-cells, and its cessation is due to inhibition of nerve-cells and not to inhibition of glandular cells.

The inhibition of nerve-cells has, in my opinion, only been proved to take place in the central nervous system. When a group of nerve-cells of the central nervous system is engaged in sending out nervous impulses, other nervous impulses reaching them by way of other nerve-cells may diminish or stop their activity. A theory which is commonly advocated now to explain this inhibition makes the activity of the nerve-cells depend upon their receiving stimuli from the minute endings of other nerve-cells, and the cessation of the activity to depend upon these minute endings either withdrawing themselves out of range or having something interposed between them and the nerve-cells so that the impulses can no longer pass. This theory I do not wish to discuss to-day; it is sufficient to say that if it is true the inhibition of nerve-cells is an entirely different process from that of the inhibition of involuntary muscle. Turning to the inhibition of involuntary muscle there is a source of confusion which we must first guard against. Nearly all the unstriated muscle in the body is kept in a state of greater or less tone or contraction by the central nervous system. A diminution or cessation of this contraction may then be caused by a diminution or cessation of the activity of the central nervous system. This cessation of contraction is of course not what we mean by an inhibition of the unstriated muscle. It is usually spoken of as an inhibition of the nervous centre. The inhibition we mean is that which is caused by stimulating the peripheral end of a nerve outside the spinal cord. I have said that the inhibition of involuntary muscle can only be obtained in certain cases and it is not easy to find anything in common with regard to these cases. But on the whole it appears that the more a structure which is influenced by the nervous system is able to work by itself the more likely it is to be under the control of inhibitory fibres. The heart, the stomach, and the intestines work when no longer connected with the central nervous system and these are especially liable to inhibition.

There has been a marked tendency amongst physiologists in considering the question of inhibitory nerve-fibres to take what may be called *the view of the equal endowment of the tissues* Because some arteries have inhibitory nerve-fibres therefore it is to be held as in the highest degree probable that all have. And many would go farther and say that it is therefore in the highest degree probable that all unstriated muscle and glands, and even the voluntary muscles, have such fibres. This view seems to me a mistaken one. There is hardly room for doubt that the motor-fibres are supplied in most unequal measure to the unstriated muscle and glands of the body. There are veins in the body containing unstriated muscle which show no visible contraction from any nerve stimulation. And there are a number of glands which no nerve, so far as we know, excites to secretion. Since in the course of the evolution of the organism a universal development of motor-fibres has not occurred, it is, I think, to be expected that the development of inhibitory fibres should be still less universal. For up to a certain point the results of inhibition can be obtained in most cases without inhibitory nerve-fibres by a simple diminution in the impulses travelling down the motor fibres. The only, and the final, test is of course experiment. But not all experiments are decisive and theory inevitably colours interpretation. This theory of the equal endowment of the tissues has, it seems to me, caused a number of quite inconclusive experiments to be accepted as offering satisfactory evidence for the existence of inhibitory nerve-fibres.

Passing from this question we may consider briefly how far we can get on the way to understand what occurs during inhibition. The external characteristic feature of inhibition is that a certain state of activity ceases; a muscle contracting at short intervals ceases to contract or a muscle in a steady state of contraction loses this state. The tissue in either case becomes flabby. The activity of a tissue may obviously be due to its receiving some stimuli from the nervous system or to its own inherent qualities. In the former case, if the tissue were only active when receiving nervous impulses, we should naturally look to some interference with these impulses as being the cause of inhibition. The blood-vessels of the submaxillary gland appear to me to offer sufficiently clear evidence with regard to the inhibition of blood-vessels. The superior cervical ganglion is the local centre from which the nerve-fibres, bringing about contraction, run to the blood-vessels of the gland. When this ganglion has been removed and the nerve fibres from it have degenerated the vessels receive no nervous impulses causing them to contract. But stimulation of the inhibitory nerve will still cause dilatation—i.e., inhibition of the blood-vessels. The inhibition must then be due to a direct action on the tissue and not to an interference with other nerve impulses. The evidence with regard to the inhibition of the beat of the heart and of the tone or peristalsis of the alimentary canal is more complex, but there is good reason to believe that the contraction is in both cases due to their inherent qualities. And if this be granted it follows that here also inhibition must be due to a direct action upon the tissue. The contraction of a muscle is due to a chemical change in it. In this chemical change some energy is set free as work—shown by the contraction of the muscle—and some as heat. It is conceivable that the nervous stimulus which causes inhibition should cause all the energy set free by the chemical change to take the form of heat. In that case the inhibitory nerve would be a calorific nerve. The amount of chemical change is indicated by the amount of carbonic acid given off to the blood. No satisfactory experiments have been made as to the amount of carbonic acid given off to the blood by an inhibited tissue, but it appears very unlikely that the amount is increased and we may take this view of the action of an inhibitory nerve as improbable. If the nervous impulse does not act in this way it must in some way stop the particular chemical change associated with contraction from taking place. It does not stop all chemical change, for blood passing through an inhibited tissue loses some of its oxygen. The simplest way for a nervous impulse to prevent a particular chemical change is to induce a different one.

We have seen that the tissues which are inhibited have a great tendency to contract of themselves—that is, they form certain very unstable substances. In closely related tissues which are not inhibited this tendency exists but little or not at all. The proximate cause of inhibition might then be that the nervous stimulus causes certain molecules of the tissue to form more staple combinations. This need not be associated with any general assimilation, it would simply make the muscle adopt for a time a mode of life more like that of other closely related muscle.

NUMBER OF RELAY STATIONS.

I have already mentioned that the nerve-fibres which pass from the central nervous system to the involuntary tissues do not run to it direct but end in groups of nerve-cells or ganglia from which fresh nerve-fibres are given off. Now in most cases there are anatomically several ganglia on a nerve in its course from the spinal cord to the periphery. For example, the nerve-fibres which cause the hairs of a cat's tail to stand on end, giving the tail the appearance of a bottle brush, leave the spinal cord in the lower part of the back and enter a nerve strand which is beaded with ganglia. They leave this strand near the root of the tail. Between the point where the nerve-fibres enter and the point where they leave the strand there are seven or eight ganglia. The fact offers us a problem of some difficulty. With how many of these ganglia are the nerve-fibres connected? Or, in other words, how many relay stations are there—eight or one, or some intermediate number? Further, do all kinds of involuntary nerve-fibres in all parts of the body have the same number of the relay stations, or do some have one, some two, some three, and so on? It would take too long to discuss this question here. But the experimental evidence is, I think, fairly decisive in favour of the simple view that the nerve-impulse passes through one relay station only.

REFLEXES.

Another point of view is given by a comparison of the groups of nerve-cells of the peripheral ganglia with the groups of nerve-cells of the brain and spinal cord. The proper working of the body depends upon an agile response by the central nervous system to what is going on in the periphery. Now, the peripheral ganglia are made up of nerve-cells and nerve-fibres which differ less in general characters from some of the cells of the central nervous system than these differ from one another. The nerve-cells of the spinal cord can receive impulses from many groups of nerve-cells both near and remote; they do not simply receive impulses from one quarter alone—say, the cortex of the cerebral hemispheres—but from many quarters and notably direct from the periphery. Hence it has been supposed that the peripheral ganglia have similar wide connexions, that they receive impulses direct from the periphery, that each is connected with other ganglia, and that impulses received from the periphery or elsewhere bring separate ganglia into coördinate action; and this view, which has been taken on general grounds, has been supported by microscopical observations.

The evidence against this view is of two kinds. In the first place it can be shown that in a number of individual instances the nerve-cells of one ganglion have no connexion with the nerve-cells of another ganglion, so that anything like a universal scheme of connexion is out of the question. And secondly, it can be shown that whenever an action occurs which might be referred to such connexion it is an action which is bound to occur in consequence of some other known arrangement, and that therefore it is unnecessary to seek for a further cause. The evidence of the first kind we need not enter into; the evidence of the second kind we may hastily touch on. If we accept the conclusion stated above that the pre-ganglionic nerve-fibres branch and the branches run to different nerve-cells it follows that a stimulus applied to one branch will stimulate a number of nerve-cells; this follows since a nerve-impulse set up in any part of a nerve travels over the whole of it. Thus actions resembling reflex actions will inevitably be obtained whenever nerve-fibres which send branches to different ganglia are stimulated below the first branch. The mechanism in this case is confined to motor nerve-fibres and nerve-cells. The action, for lack of a convenient term, was spoken of by Dr. Anderson and myself simply as a reflex action. It is perhaps better to call it a *pseudo-reflex action*.

Regarded from the customary point of view a pseudo-reflex differs widely from a reflex action. The one is brought about by stimulating an efferent or motor fibre and the other by stimulating an afferent or sensory fibre. But suppose we compare them from a somewhat different point of view [here Dr. Langley showed a diagrammatic representation of a pseudo-reflex] and you will see that the two can be described in exactly the same terms, and both are reducible to the same diagram. It is true that the cells are not similarly situated in the two cases, but no one has even suggested that the position of a nerve-cell determines whether an action in which it takes part is a reflex or no. And so it might be urged that the one action has as good a title to be called a reflex as the other. I do not, however, wish to insist too much on this comparison. I am inclined to say, after Touchstone, "An ill-favoured thing, Sir, but mine own." If, as some think is the case, the spinal ganglion cell receives the nerve-impulse conveyed by the peripheral nerve-process and modifies it before passing it on to the central process this establishes a distinguishing character for the true reflex. It would be probably a cellular or neuron reflex, the pseudo-reflex being simply an axon reflex. The important known difference between the reflex and the pseudo-reflex is that in the former case the nerve endings of the primarily affected nerve-fibre are specially differentiated for receiving nerve impulses and in the latter case these endings are specially differentiated for imparting nerve impulses. And on the whole it is probable that the pseudo-reflex is not a customary part of the working of the body but comes into play only as it were by accident. I do not, however, regard this as quite certain.

The pseudo-reflex I have spoken of is caused by the excitation of nerve-fibres before they reach the ganglia—i.e., of pre-ganglionic fibres. But the fibres which are given off by the ganglia also branch, so that it appears inevitable that we should have in certain circumstances an action related to a reflex caused by a stimulation set up in one of these branches spreading to the rest—i.e., a spreading out of impulses in post-ganglionic fibres similar to that which occurs in pre-ganglionic fibres. This spreading out of impulses does not necessarily involve the stimulation of any nerve-cell; it might perhaps be distinguished as *irradiation*. It would probably be very local in action unless there were overlapping of the districts supplied by the several nerve-cells. But when there is overlapping a not inconsiderable spreading out of a local contraction may take place, giving rise to a peristaltic wave. It must be pointed out that it has been assumed that in the sympathetic nervous system an impulse cannot pass from a motor fibre through the nerve-cell from which the fibre arises and affect any other nerve fibre or nerve-cell. There is, I think, satisfactory ground for this assumption.

To return to our main line of argument, we have good evidence that nervous impulses set up in one spot may affect regions more or less remote by a mechanism which does not involve the presence in the sympathetic system of special sensory nerve-cells with peripheral sensory nerve-endings. And I think that all the apparent reflex actions in the peripheral ganglia can be explained without reference to such sensory apparatus. And so I take the analogy of the peripheral ganglia with the central nervous system to be misleading and consider that all the nerve-cells of which we have been speaking are motor nerve-cells and that they all conform to one plan. Thus the whole consists of reduplications of one type, a cell in the spinal cord which branches, each branch ending in a single cell; each of these cells sends off a nerve-fibre which branches, the branches ending in a group of involuntary muscle or gland cells. That I regard as the real working mechanism, but there are two reservations to make. All the tissues of the body may be looked upon as engaged in a life-long process of carrying out experiments and I am prepared to believe that there are in the body what may be spoken of as the residues of these natural physiological experiments, either the beginnings of experiments which have not succeeded or the melancholy ends of those which, once partially successful, have failed later. Such, possibly, may be the sympathetic nerve-cells which several eminent observers have described as sending their nerve-fibres not to the periphery, but to other nerve-cells. Secondly, in this account I have not included the nerve-cells which exist in the wall of the alimentary canal, the cells of Auerbach's and of Meissner's plexuses. These "enteric" nerve cells belong, I hold, to a system different from that of the other peripheral nerve-cells. With regard to their connexions I do not think anything can be said with certainty.

REGENERATION; SPECIFIC NERVE ENERGY.

One other problem presented by the involuntary system we may say a few words about. You know that when a nerve in the hand or the arm is cut the nerve will in proper conditions grow again; and the lost feeling and the lost power over the muscles will return. The recovery is brought about by the part of the nerve which is attached to the spinal cord growing along its old track and spreading out as before in the muscle, the skin, and other tissue. At any rate that is the method for which there is most

evidence. You may know also that when the nerve-fibres in the spinal cord are similarly injured they do not recover function. Regeneration in the latter case implies that the nerve-fibres have to form fresh endings in connection with nerve-cells. If this were more difficult than the formation of nerve-endings in muscle and other non-nervous tissues, the difference which exists as regards recovery of function between the nerve-fibres of the limbs and nerve-fibres of the spinal cord would be readily explainable. But recent experiments show that the nerve-fibres which run from the spinal cord to the peripheral ganglia—i.e., pre-ganglionic fibres—re-form with ease their connexions with nerve-cells, so that we may probably seek in mechanical conditions for the reason of the absence of regeneration of the fibres in the spinal cord. Possibly some way may be found of improving the mechanical conditions, and so obtaining regeneration. That question, however, we need not enter into.

The regeneration of the pre-ganglionic nerve leads to some very interesting questions. The nerve-fibres which end in a sympathetic ganglion are rarely, if ever, all of one kind—that is to say, they do not all produce the same effect. Thus of those which run to the ganglion in the upper part of the neck some cause the eyelids to move apart, some cause the pupil to dilate, some cause the face to become pale, some cause the glands of the mouth or skin to secrete, and others have other effects. These different kinds of nerve-fibres run in large part at any rate to different nerve-cells in the ganglion. There are in the ganglion several thousands of nerve-cells closely packed together, and it would seem hopeless for each kind of nerve-fibre, as it grows again into the ganglion during regeneration, to find its proper kind of nerve-cell. Nevertheless, nearly all of them succeed in doing this. The nerve-fibres which normally cause separation of the eyelids, or dilatation of the pupil, or pallor of the face, or secretion from the glands produce the same effects after several inches of their peripheral ends have formed anew. Through the matted mass formed by the delicate interlacing arms of the nerve-cells the ingrowing fibres pursue their tortuous course, passing between and about hundreds of near relations until they find their immediate stock, whom they clasp with a spray of greeting tendrils and so come to rest. The fact offers at first sight a striking proof of a specific difference between different classes of nerve-fibres and between different classes of nerve-cells. But absolute laws seem unfitted for a work-a-day world. Closer observation shows that the fibres have not always this marked preference for their own stock. The nerve-fibres of the cervical sympathetic, the nerve I have spoken of above, do not often go astray, at any rate so far as is known. But they do sometimes; thus it may happen that some nerve-fibres which ought to find their home with nerve-cells governing the blood-vessels take up with nerve-cells governing the dilator structures of the pupil. And if we turn to other nerves greater aberrations are found.

An important cranial nerve is the vagus. It causes when in action cessation of the heart-beat, contraction of the œsophagus, contraction or inhibition of the stomach, and various other effects. It does not send nerve-fibres to any of those structures of the head which we have seen, the sympathetic ganglion at the top of the neck—the superior cervical ganglion—so liberally supplies. And yet the vagus nerve if it has a proper opportunity of growing into the superior cervical ganglion will do so and there establish connexions with the nerve-cells. Thus the nerve which properly exercises control over certain viscera in the thorax and abdomen is capable of exercising control over structures in the head such as the iris, the blood-vessels, and the glands. The details of the process, with which I will not trouble you, do not afford any clear evidence that the nerve-fibres of the vagus pick and choose amongst the nerve-cells of the superior cervical ganglion; the fibres appear rather to form their terminal branches around any kind of nerve-cell, so that, in fact, the action which the nerve-fibre will in future bring about depends not on any intrinsic character of its own, but upon the nature of the action carried on by the nerve-cell. The nerve-cell may cause secretion from a gland, or contraction of a blood-vessel, or dilation of the pupil, or movement of hairs, whichever action it causes the nerve-fibre which joins it from the vagus nerve can cause for the future and it can cause no other. In this case, then, we arrive at results which are hopelessly at variance with the view that the nerve-fibres and nerve-cells of the involuntary nervous system are divided into classes which are fundamentally different. In other words, that theory which is spoken of as the theory of specific nerve energy does not apply here. But if this is so how are we to account for the selective power shown by the sympathetic nerve-fibres which I have mentioned earlier.

That the different classes of nerve-fibres and nerve-cells with which we are dealing have not those deep and inherent differences which are required by the theory of specific nerve energy is, it seems to me, certain. Nevertheless there may be some differences of a comparatively superficial nature which suffice to explain the selective activity observed. We may suppose that a re-growing nerve-fibre will in favourable circumstances join a nerve-cell, the function of which is the same as that of its original cell, but that if there are hindrances in the way of a return to normal action and if the conditions are favourable for joining a nerve-cell acting on some other tissue why then it will join this. It is as if it had a preference but did not care overmuch. We might perhaps express the facts by saying that there are different varieties of pre-ganglionic fibres but no species. We have been speaking so far of the nerve-fibres which run from the brain and spinal cord to the peripheral nerve-cells. The nerve-fibres which run from the peripheral nerve-cells have also, there is reason to believe, a large measure of indifference as to the kind of work they perform. The limits of this indifference have yet to be investigated.

The questions I have dealt with include most of the questions which have been recently investigated with regard to the involuntary nervous system in mammals. We have seen that in mammals there are tissues and portions of tissues which, so far as we know, receive no motor nerve-fibres. Some of these, however, in lower vertebrates do receive motor nerve-fibres. Thus in the frog the pigmented connective tissue-cells situated beneath the epidermis can be made to contract or to re-arrange their pigment granules—and so change the colour of the skin—by nervous excitation. And so it is probable that what I have described as the autonomic or involuntary nervous system is potentially capable of joining with all the tissues of the body save striated voluntary muscle. I am not without hope that even in the mammal nerve-fibres normally supplying unstriated muscle or glands may experimentally by offering them favourable conditions be induced to join connective tissue cells.

Lastly, on this matter I would say that it is conceivable that in some lower vertebrates at some time the autonomic nervous system may have developed *especially* in connexion with those tissues which appear in ourselves wholly unprovided with motor nerve-fibres. This line of thought, however, I must be content to suggest rather than to follow to-day. I am tempted before ending to make a slight digression. Those who have occasion to enter into the depths of what is oddly, if generously, called the literature of a scientific subject alone know the difficulty of emerging with an unsoured disposition. The multitudinous facts presented by each corner of Nature form in large part the scientific man's burden to-day and restrict him more and more, willy-nilly, to a narrower and narrower specialism. But that is not the whole of his burden. Much that he is forced to read consists of records of defective experiments, confused statement of results, wearisome description of detail, and protracted discussion of unnecesary hypotheses. The publication of such matter is a serious injury to the man of science; it absorbs the scanty funds of his libraries and steals away his poor hours of leisure. Here I bring my remarks to a close. I have endeavoured in the preceding account of the autonomic nervous system to give as clearly as possible what seem to me to be the conclusions which logically follow from certain data, but I would not have you believe that I regard them as representing more than the immediate point of view. As the wise man said: "Hardly do we guess aright at things that are upon earth, and with labour do we find the things that are before us."

NURSES FOR THE PHILIPPINE ISLANDS.—The *Maryland Medical Journal* of Sept. 2nd states that 2500 male nurses are wanted by the American War Department for service in the Philippines and a special effort is being made to induce young men to enlist in the Hospital Corps. General Sternberg has ordered 20 more female nurses to be sent to Manila.

An Address
ON
THE TREATMENT OF STRABISMUS IN YOUNG CHILDREN.

Delivered at the International Ophthalmic Congress, Utrecht, August, 1899,

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MR. PRESIDENT, LADIES, AND GENTLEMEN,—The question which I have the honour of laying before you has, I think, a certain fitness for this Utrecht Congress. In approaching it we naturally think of the great teacher who gave us a rational treatment for strabismus, who laboured here in years gone by, and whom we now miss from among us. My object is to advocate the early treatment of strabismus—that is to say, an earlier treatment than is customary, so far as my experience goes. I shall put before you my own experience only, but I would say at once that my interest in this question has been largely owing to the writings of Javal. The observations which I have to offer relate to several points: (1) the very early age at which strabismus commonly begins; (2) the delay which frequently occurs before treatment is obtained; (3) the harm which may arise from such delay; and (4) the results which may be obtained by early treatment. A thorough study of this question demands a very careful distinction of cases according to the many points in which they differ, and with this end in view all cases of concomitant strabismus coming under my care since the beginning of January, 1897, have been examined on a uniform system and recorded on special printed forms. The method of examination was described in the Bowman Lecture of 1898[1] and need not be repeated here. I have now for analysis 576 cases of concomitant convergent strabismus registered in this way, though, of course, many of them are very incomplete.

The first question of interest relates to the time of life at which strabismus begins—*the onset-age*. This in many of my cases was quite unknown or too uncertain for a record, but in a large number it was fixed with considerable precision. These are shown in Table I., Series A. It will be seen that in 60 per cent. of the cases the strabismus began before the children were four years old. Arranging the cases in biennial groups we see that the chief period of onset is that which includes children of two and three years old, and if we look at single years we see that more cases begin at three years old than at any other age. After six years of age the onset of strabismus is much less frequent. It is clear from these figures that if we are to treat the disorder in its early stage we must treat it, in the majority of cases, at a very early time of life.

It will be well in the next place to form some idea of *the delay which actually occurred* before these squinting children were brought for treatment. It is shown by the figures in Series B and C (Table I.). It will be seen that 68 per cent. had no treatment for at least 12 months after the onset of the strabismus and that 47 per cent. had none for at least three years. What is the explanation of this frequent long delay? Sometimes, no doubt, it is due to mere neglect and carelessness on the part of the parents, but more often, I think, to a not unnatural caution and reluctance. Some cases recover, and others appear to recover, in course of time without treatment of any kind; many persons still suppose that an operation is the only cure for strabismus; even we ourselves are not entirely of one mind as to how and when it is best to interfere. It is not surprising, therefore, that parents should often be disposed rather to wait and hope for improvement than at once to seek for treatment. They do not know that delay is dangerous to the visual function.

This brings me to my third point—*the harm which arises through delay*. The most obvious of the visual defects met with among those who squint is the inability to "fix" properly with the squinting eye when the good eye is covered. Fixation-power should be tested in the dark room with the help of the ophthalmoscope. The good eye is well covered, the light from the mirror is thrown on the squinting eye and the child's attention is attracted to it. The position of the corneal reflex in the illuminated pupil tells the observer whether fixation is true or false. False fixation was found in a minority of cases. Why do some eyes fail in this way and others not? Clearly a squinting eye will not lose fixation power so long as the strabismus remains periodic or alternating, for under these conditions fixation is resumed from time to time. False fixation implies that the strabismus is continuous and monolateral. But even in continuous monolateral strabismus the squinting eye can, in the majority of cases, fix properly when required to do so. What are the determining causes of false fixation? Probably they are many, and some of them beyond our means of observation, but two at least are certain: early onset and long duration. To prove this statement I must trouble you with more figures. Series D (Table II.) shows again the cases of known onset-age, but with exclusion of all those which were periodic or alternating when brought for treatment. It contains 205 cases of continuous monolateral strabismus grouped according to onset age. Series E (Table II.) shows that nearly one-third of these—30 per cent.—have false fixation. On comparing the several life periods we see that the cases dating from the first two years of life yielded a high percentage, those from the second biennial period a lower one, those from the third a lower still, until among cases beginning at six years old or later false fixation is almost entirely absent. There was only one doubtful exception.[2] Of course, a lesion of the eye, such as corneal opacity, traumatic cataract, atrophy of the optic nerve, and so forth, may destroy fixation and induce strabismus at any age; such cases were not included in my tables. My figures show that in simple strabismus there is a close connexion between early onset and false fixation.

Then comes the question, Is it the early squint that impairs the faculty of fixation or is it an initial absence of fixation-power that leads to early squint? In the main it is the former, for no child was found to have false fixation who had not squinted for at least six months. It is largely a question of duration. Series F (Table II.) shows these same cases grouped according to duration as well as to onset-age. Looking first at the totals we see that a comparatively long duration involves a high percentage of lost fixation-power, a short duration a low percentage, and I may add that I saw 24 young children whose strabismus in every case was already continuous and monolateral but of less than six months' duration, and among these the fixation power of the squinting eye was not lost in a single instance. Now if we compare the several life periods we see that the loss of fixation reached its maximum frequency among those children who began to squint earliest and went without treatment longest. Here we see it in no less than 87 per cent. The reason is plain. The development of vision is a gradual process extending over several years. The new-born child has a mere perception of light. He acquires by degrees the faculties of fixation, fusion, and form perception. He renders these faculties stable by constant use. Fixation is commonly acquired within a few weeks of birth but has no stability until much later. In the first years of life it is easily unlearned and easily relearned in a perverted form, and by long continuance the perverted habit, like the true, is ingrained and rendered permanent. And fixation is not the only faculty which suffers through the early onset of strabismus. The sense of fusion is perverted or destroyed whether fixation be lost or not. Thus, an infant who develops an alternating strabismus retains full fixation-power in each eye alone, but loses all sense of normal fusion, and may be entirely unable to re-acquire it in later years when the eyes are put straight. The third faculty, that of form-perception, probably suffers in like manner. The amblyopia of these squinting eyes probably depends, in part at least, on an arrest of visual development through non-use. The point has been much discussed. According to some authors the amblyopia is the initial fault, the squint the consequence. No doubt this is the true

[1] Transactions of the Ophthalmological Society of the United Kingdom, vol. xviii., p. 17; and Ophthalmic Review, June, 1898.

[2] A man, aged 25 years, presented himself with extreme strabismus and false fixation; he assured us on the authority of his mother that the strabismus began after typhoid fever when he was 10 years old.

TABLE I.—ONSET-AGE. DELAY OF TREATMENT.

(347 Cases of Known Onset-Age.)

ONSET-AGE:	Under 12 months.	1 year	2	3	4	5	6	7	8	9	10	11	12 and over.
Series A.—Number of cases which began at each age:—	24	40	62	84	44	46	11	14	7	7	1	2	5
	64		146		90		25		14		3		5
Total 347	210 = 60 per cent.				137 = 40 per cent.								
Series B.—Cases which had no treatment for at least 12 months:— Total 236 = 68 per cent. of Series A.	50		102		56		14		10		1		3
Series C.—Cases which had no treatment for at least 36 months: Total 163 = 47 per cent. of Series A.	31		72		42		11		5		1		1

TABLE II.—FALSE FIXATION IN RELATION TO ONSET-AGE AND DURATION.

(205 Cases, being the same as Series A, with exclusion of all which were Periodic or Alternating when brought for treatment.)

ONSET-AGE:	Under 12 months.	1 year	2	3	4	5	6	7	8	9	10	11	12 and over.
Series D.—Cases which were continuous and monolateral when brought for treatment:— Total 205	31		92		54		14		9		3		2
Series E.—Cases which had false fixation when brought for treatment:— Total 61 = 30 per cent. of Series D.	19 = 61 per cent. of the above.		31 = 34 per cent. of the above.		10 = 18 per cent. of the above.		0		0		1?		0
Series F.—The above, classed according to duration, viz.:—													
Less than 12 months: Total 63	6		28		17		6		3		2		1
False 5 = 8 per cent.	1 = 17 per cent.		4 = 14 per cent.		0		0		0		0		0
12-35 months: Total 35	10		14		7		2		2		0		0
False 12 = 34 per cent.	5 = 50 per cent.		5 = 36 per cent.		2 = 29 per cent.		0		0		0		0
36 months and over: Total 107	15		50		30		6		4		1?		1
False 44 = 41 per cent.	13 = 87 per cent.		22 = 44 per cent.		8 = 27 per cent.		0		0		1?		0

TABLE III.—CHILDREN BROUGHT FOR TREATMENT UNDER FOUR YEARS OLD—(*96 Cases*).

AGE:	Under 1	1 year.	2 years.	3 years.
NUMBER OF CASES. TOTAL 96	1	14	37	44
Treatment neglected or result unknown ... ,, 41	0	10	14	17
Treatment carried out more or less completely ... ,, 55	1	4	23	27
Glasses employed in ... 51	1	2	22	26
Shade or pad in 38	1	3	17	17
Operation in 15	0	0	7	8
RESULTS IN THE ABOVE 55 CASES.				
Angle of squint reduced to 0° (objective test) ... ,, 25	0	2	13	10
Angle of squint diminished, but not to 0° ... ,, 20	0	0	8	12
Angle of squint unaltered or increased ... ,, 8	0	1	2	5
Continues to alternate ... ,, 2	1	1	0	0
False fixation rendered true... ,, 5 (of 8)	0 (of 0)	0 (of 0)	2 (of 3)	3 (of 5)
Monolateral squint rendered alternating ... ,, 5	0	0	2	3

explanation of some cases, but it is no less probable that an eye which is thrown out of use before its functional development is finished is likely to remain undeveloped and defective. But I will not press this theory of amblyopia from non-use; we can neither prove it nor disprove it, for we cannot test an infant's acuteness of vision at the age when strabismus commonly begins. Putting this question on one side, it is still quite clear that the young child who squints may suffer lasting detriment unless we interfere to help him.

Can we interfere with advantage? To what extent are our means of treatment applicable in very early childhood? Here I will draw an arbitrary line and speak only of children under four years old.

The first difficulty is the examination. This must be entirely objective. These children cannot help us by reading Snellen's letter or by answering questions about double images, and some of them would not even if they could; the most they will do for us is to look more or less steadily at any attractive object placed before them. But this is really all we need. Apart from the history of the case we can usually discover whether the strabismus is periodic or continuous, whether it is alternating or monolateral, and whether the squinting eye has true fixation-power or not. We can measure the angle by the tape method in almost every case, and such measurements are of great value during the course of treatment as indications of progressive improvement in some cases, of standstill and the need for operation in others. In some cases of quickly alternating strabismus the tape method fails, but these are few in number. Lastly, with the help of atropine and the shadow test we can estimate the refraction. We have then the data required for treatment.

Our means of treatment are, broadly speaking, three. First we can diminish accommodative effort and sharpen vision by glasses, or we can hold accommodation in abeyance by the continued use of atropine. Secondly, we can exercise the squinting eye, or both eyes alternately, by the use of a pad or shade. Thirdly, we can operate. Table III. shows that 96 children were brought for treatment before they were four years old, but that not nearly all of them were actually treated. Some came once and were seen no more; others were brought a few times, but the treatment was never carried out; others vanished during the course of treatment and the results remain unknown. There were, however, 55 who were treated more or less persistently and concerning whom I can say something as to results. I shall speak only of these 55.

Spectacles were ordered for 51 of them and were worn. The hypermetropia in several of these cases was of low degree—from 1·5 to 2·5 dioptres—degrees which, perhaps, are normal at that time of life and which certainly no one would correct in such young children in the absence of strabismus; but when strabismus has begun it is wise to avail oneself of every possible means of counteracting it and there are certain cases in which quite weak glasses make a difference. In the large majority of cases the hypermetropia was of higher degree. The strongest glasses ordered were seven dioptres. The youngest child put into spectacles was 14 months old when he began to wear them. 12 of these 51 children were cured completely, according to objective tests, by glasses only, and it is noteworthy that these cures were not limited to cases of periodic strabismus—seven were periodic and five were continuous. In the majority of cases the glasses were employed in conjunction with a pad or shade and in a few with operation.

A pad or shade was employed in 38 cases, generally in conjunction with spectacles. To occlude the better eye of a young child is not always easy. The shade especially is apt to fail, for if any gap is left between shade and nose the child will turn his head and look through it rather than use the unaccustomed eye. A pad of cotton wool or linen placed between the spectacle and the closed lids is better. A tendency to conjunctivitis will sometimes preclude this latter method but in most cases it answers well. The child may rebel at first, pulling off the pad perhaps twenty times a day; the mother must put it on one-and-twenty times. Patience will win the battle. The mother must be clearly told the reason for it: that the squinting eye is not used properly; that the child will never learn to use it unless he be made to do so; and that he must learn it now or never. The value of the pad is beyond all question. It is evident in several ways. Among these 55 children, as the table shows, there were eight cases of false fixation; five of these recovered the faculty of true fixation during the use of the pad. One of these is now old enough to be tested subjectively and has, at least for reading distance, true binocular vision. Among older children not included in this table there were cases of the same kind but they were rarer in proportion at the later ages. The older the child the smaller the chance of restoring lost fixation. Again, in five cases, a strabismus which appeared at first to be persistently monolateral became alternating under the influence of the pad, and in another case the eye which at first habitually squinted became the fixing eye by preference. Further, in many cases, though the character of the strabismus remained unchanged, the function of the squinting eye was obviously strengthened and corrected. At first with the good eye covered the child was awkward and apt to fall, misjudged the position of things he tried to grasp, and naturally objected to the pad. A little later these difficulties disappeared and the pad was tolerated willingly. Many of the mothers spoke strongly of this improvement. The pad is useful in checking the habit of suppression, a habit most convenient to the squinter, but a great obstacle to the recovery of binocular vision. Lastly, it is useful not only in restoring a function which is impaired but in preventing such impairment. In a minority of cases, chiefly of periodic strabismus, it is superfluous; in long-standing cases where fixation power is irrevocably lost it is useless; in the large majority it is a most important means of promoting the recovery of binocular vision.

Tenotomy was performed in 15 of these 55 cases; on both eyes in eight cases, on one eye only in seven. Some surgeons make it a rule not to operate for strabismus before the child is five or six years old; some say the best age is ten years; a recent British writer would make it later still. Late operations sometimes give perfect cures: binocular vision is recovered to the full extent. In such cases, probably, the squint did not begin, or at least did not become continuous, at a very early age; the sense of fusion had become ingrained before it was disturbed and was therefore recoverable when the eye was put straight. But there are many cures, so-called, in which true binocular vision is never re-acquired. The question is whether the number of these might not be diminished by operating earlier. Take the case of a child brought when two years old with a continuous strabismus and uncertain fixation-power in the squinting eye. Suppose that by constant use of glasses and pad we get, during the next three months, some diminution of the angle of the strabismus and a return of active fixation-power in the faulty eye, and then month after month no further progress, what are we to do? Shall we postpone operation for three or four years and try to persuade the mother to apply the pad periodically or continuously during the whole of this time? We shall almost certainly fail in this, and in any case there will be no development of the sense of fusion. The chances are that by the time the child is five years old recovery of binocular vision will be impossible. In such a case I should prefer to operate even at two years old. The operation, of course, will not interfere with further educative treatment; on the contrary, it will expedite and aid it. The tendon should be set back only to a very moderate extent, and this can be done with far greater certainty, according to my experience, by the direct than by the subconjunctival method. Since finally abandoning the latter, two years ago, I have had no case at any age which has seemed to threaten secondary divergence. But even at some risk of divergence a few years later I would try for binocular vision by operating at two years old rather than abandon it for life. It is far easier at any later time to readjust a muscle than to arouse an undeveloped faculty. Pray do not suppose that I advocate hasty or indiscriminate operation. On the contrary, in every case a persevering effort should be made to do without it, but when all progress by other means comes definitely to a standstill and operation offers the only prospect of binocular vision, then, in my opinion, it is right to operate, and especially if the child be young. I have operated several times at two years old and more frequently at three and four years, and have seen no reason to regret it. The table shows that among 23 children brought for treatment when they were two years old seven were operated upon; of these three were under three years of age at the time of operation and the others were a little older. At present two of these seven children still have some inward deviation; the others, according to objective tests, are straight; one of them, who is now old enough for the subjective test, is proved to have

binocular vision and I have little doubt that the others have it too.

Many of the cases in my series are still in course of treatment. Some would have done better if the directions had been better carried out. The general result, however, is enough to show that treatment can be employed with benefit at a very early age, and if I may specially insist on certain points they are the importance of educating squinting eyes and the value of the corneal reflex of the ophthalmoscope as a test of fixation. To sum up, I would urge that the rational treatment of strabismus is, in many cases, a very early treatment; that in every case the child should be thoroughly examined soon after the strabismus begins; and that this principle should be urged by us upon the whole profession in order that it may reach the public.

THE LAW OF INCOMPATIBILITY IN TREATMENT.

BY J. GORDON SHARP, M.D. EDIN.

IT matters not how deep a man's knowledge of chemistry, physiology, and pharmacy may be; sooner or later he finds himself transgressing the fundamental canons of these sciences in his prescribing. Let him be ever so careful he finds on looking over his prescription book that he has broken the laws of compatibility times without number and has prescribed compounds which would shock the feelings of the pharmacist's youngest apprentice. These faults no doubt arise from the desire to attack the diseases of our patients at as many points as possible. This laudable desire more than ignorance accounts for our over-prescribing and multiple pharmacy. But there is the other side to be considered. If we are too strict in our observance of chemical compatibility and elegant pharmacy we may find we have imposed upon ourselves burdens grievous to be borne, while we are in danger of forgetting the patient by paying too much attention to the disease and the prescription. This leads up to the observation that the prescription is only a part, and often a small part, of the treatment. So far I have only spoken of chemical incompatibility. There is another and far more important form of incompatibility—namely, the physiological or pharmacological more properly so-called, hence the criticism of a prescription or method of treatment from the side of chemistry or pharmacy alone may be entirely erroneous. It thus goes without saying that the prescriber must take an all-round view of the patient and of his disease. I may now make a systematic division of incompatibles: (1) chemical; and (2) physiological, or more properly pharmacological. This second may be divided into (*a*) cases in which two or more drugs or chemicals are prescribed, the one having an action the very opposite of the other, as, for example, a drug increasing reflex irritability and one reducing the reflex irritability; and (*b*) cases in which we apparently prescribe drugs or chemicals at variance with the accepted pathology of the particular disease we are then treating. As an example of this class I might cite the giving of perchloride of iron in erysipelas, iron being till lately considered incompatible in febrile affections. We shall hereafter find an explanation of this apparent incongruity.

Having classified the incompatibles I may go on to criticise and seek for an explanation of the employment of some well-known mixtures. The examples shall be taken from every-day practice. It is not my intention to study the chemical and physiological apart from one another, for the one merges into the other. Such an arrangement only means the consideration of detached controversial points, and as prescribers our duty should be to take a comprehensive view of the whole subject. I take sodium salicylate as an example. The books tell us that we should not prescribe this salt with free ammonia or carbonate of ammonia, for if we do the mixture soon turns brown. Perhaps so; but we get out of this difficulty by prescribing mixtures which last the patient only 24 hours, and experience has taught us that patients often take salicylates better when it is given along with an ammonia stimulant. At the present time a popular compound is one made up of pepsin, a soluble salt of bismuth, prussic acid, nux vomica, and opium. Such a mixture at first sight appears to transgress every law of chemical compatibility, and even allowing for clinical experience as to its efficacy I am not sure but what a simple mixture of prussic acid, nux vomica, and opium arranged by the prescriber himself would not accomplish all that the more elaborate preparation is supposed to do. Some incompatible mixtures are allowable, others are not allowable, and I believe this belongs to the latter sort. To go on ordering such compounds only turns the dispenser into the prescriber and the prescriber into the dispenser. Writing of bismuth reminds me that there is another preparation of this metal which is often prescribed. Subnitrate of bismuth and bicarbonate of sodium with prussic acid and peppermint-water is a favourite mixture with some of us. It is an example of a chemical but not of a physiological incompatible. The subnitrate and the bicarbonate react on one another and produce carbonic acid gas in sufficient amount sometimes to break the bottle or discharge the cork. However, this happens rarely and the small quantity of carbonic acid gas which is generally generated has a salutary action on the patient's stomach. One could substitute the carbonate of bismuth for the subnitrate but then one does not get the carbonic acid gas.

As other examples we have Blaud's pills or capsules, in which case there is an intentional incompatibility, the sulphate of iron and the carbonate of the alkali reacting to form a ferrous carbonate. The same reaction results in the compound iron mixture of the Pharmacopœia. Some of the iron is, again, in the stomach changed into the chloride, and still further, when this reaches the small intestine an albuminate or peptonate of iron may be formed and finally the whole of the iron passes off by the bowel as a sulphuretted compound of the metal. None of it is absorbed and yet we know that it is our best remedy in a lack of iron in the blood commonly called anæmia. To digress further. The question may be asked, Why do we not prescribe the pure ferrous carbonate without the admixture of sodium sulphate present in Blaud's pills? The pure ferrous salt is difficult to keep, but even where it has been tried it has been found not to answer so well as the freshly prepared pill. To push the question, one might ask why we do not give the ferrous chloride. It, too, has been tried but does not act so well as the Blaud's compound. The fact probably is that the stomach forms the ferrous chloride in such amount as is suitable and compatible with the carrying on of the digestive process. Again we turn to iron. Perchloride of iron and sodium salicylate are incompatible from a chemical point of view, and yet in some throat affections we may, by prescribing them together in solution, obtain the advantages of both. The only objection is the colour, which is a dark purple. Perchloride of iron is sometimes prescribed with acetate of ammonium and from one point of view they are incompatible, but some prescribers like this compound and look upon it as an excellent tonic which does not disagree with the stomach as does the perchloride of iron in many instances. I have seen men prescribe tannin and perchloride of iron. These are assuredly incompatible. They form nothing more or less than ink and without the astringency of either the tannin or the iron, and it appears difficult to defend the prescribing of such a compound on any grounds, chemical or physiological.

I proceed to detail a somewhat different class of examples which deal more with the physiological than the chemical. One occasionally hears of men prescribing bromide of potassium along with solution of strychnine. From the chemical side such a prescription is incompatible, for the bromide may throw down the strychnine and the patient may receive the bulk of the alkaloid in the last dose. Still, this difficulty may be got over by prescribing small quantities and in dilute solution. From the physiological standpoint this compound too is to be criticised. Bromide of potassium lessens reflex irritability while strychnine has just the opposite action. Despite this declaration men go on prescribing the mixture and many have great faith in it for neuralgia, having proved its efficacy by experience. There must be some explanation for this and it may be found in the time of action of the two remedies. Although bromide of potassium and strychnine are within certain limits the physiological opposite of each other the one acts much more quickly than the other. The bromide being soluble soon passes into the circulation and is carried to all parts and acts as a calmative and analgesic to the sensory apparatus. Strychnine acts slowly in small doses and it only begins to

have effect after the main action of the bromide has passed off. Here, then, is a good reason for examining minutely into the physiological action of any remedy or set of remedies we employ.

Our forefathers in prescribing digitalis found that they got all the necessary dynamic action of the foxglove and obviated many of its untoward effects by combining the drug with sweet spirit of nitre. Experience taught them to prescribe what a limited knowledge of physiology might have told them to withhold. For are the two not physiological opposites within certain degrees? Digitalis constricts the blood-vessels and causes the heart to beat more slowly, and sweet nitre is more than the mere stimulant and diuretic which our forefathers thought it. The new pharmacology tells us that its main action is that of a dilator of vessels and an accelerator of the heart's action. We cannot gainsay this, for we can see this for ourselves in the laboratory; nevertheless, we prescribe the two together because we test the efficacy of the combination at the bedside. What is the reason of the apparent discrepancy? Again, it may be that we have to deal with a near and a remote action. Sweet nitre has a near action and this we examine for ourselves by exhibiting a dose of the drug and soon the finger detects the soft relaxed pulse. Digitalis acts slowly and it may be from 24 to 48 hours before we can perceive its presence in the circulation. But I hold that there is another explanation, although few may agree with me. I believe that sweet nitre and all the other nitrites and nitrates act only on the vessels, whilst digitalis acts entirely on the heart, and thus the equilibrium is maintained by prescribing the two together. Digitalis can still act on the heart and bring more blood to the parts, while the sweet nitre preserves the tonicity of the vessels and so the heart is protected from the effects of its own extra action. The value of this is apparent. The digitalis raises the blood-pressure (in what way I do not here stop to discuss) and there is a contraction of the vessels and the heart has to spend its own energy in overcoming this contraction of vessels. But if we give sweet nitre at the same time we overcome the contraction in great measure if not entirely.

The treatment of gout affords examples of physiological chemistry being wanting in clearing up obscure points. Sodium salts are said to be contra-indicated in gout and yet on looking up the analysis of many of the reputed spas to which the gouty resort we find sodium in some shape or other present and often is the predominating metal. In the recent treatment of a gouty patient with sodium, magnesium, and potassium salts the patient himself declared without prompting that the sodium mixture did him most good. Whilst on the subject of gout I am reminded that recent research has led to a modification of the prevailing views on the pathology and treatment of this historic disease. The relationship which uric acid has to gout in the acute and chronic manifestations is variously debated. The treatment of the malady is by some observers said to be best carried out by plenty of fluids to eliminate the poison. But might I not ask the question: Why not try to eliminate the poison of every disease? for is this not the basis of treatment in general? Colchicum is an old remedy in acute attacks and is admittedly a useful one in reducing the redness and exquisite tenderness of the affected joint or joints. It is the analogue of sodium salicylate in acute rheumatism. But in my opinion colchicum is not in the general sense of the term an eliminator of the poison of gout. It paralyses the sensory nerves and soothes the patient and places him on the high road towards recovery. To complete the cure the colchicum must be combined with, or be followed up by, more powerful eliminants. Pharmacology has not yet decided the exact action of colchicum. Some authorities say that it increases the excretion of uric acid, others say the urea, and some, again, that it increases neither. I may, however, say with some degree of certainty that it has little or no action on the higher centres and therefore does not affect the chief vaso-motor area; but it does act on the cord and first stimulates and then paralyses the sensory nerves, leaving the motor nerves unaffected. I speak of moderate doses, of course. But here the laboratory stops and the remainder of the pharmacology is best understood by watching the action of the drug at the bedside of the patient. To begin with, colchicum is a poison and even in small doses its poisonous action is evident; and to go further, it is one of those which is eliminated by many channels and in its elimination it stimulates the secreting organs. It stimulates the kidneys, the alimentary tract, the skin, and the liver. This points to its action on the circulation being reflex. The same may be said of its action on urea and uric acid. One wonders, after all, if there is any better combination for the general treatment of gout than the mixture made up of medium doses of colchicum wine, large doses of magnesium carbonate, and medium doses of bicarbonate of potassium given in peppermint water. For another example I turn to the theoretical and the practical treatment of lead poisoning. Physiological experiment teaches that iodide of potassium is rapidly eliminated by many channels, and chemistry proves that iodide of lead is comparatively soluble at the body temperature. What more natural conclusion, then, that for the elimination of the lead poison we should employ the iodide? During 12 months' experience of an epidemic of chronic lead poisoning due to the using of soft water I tried this remedy extensively, but had to give up its use because of the frequency with which it aroused all the old symptoms of colic and muscular and joint pains. This shows us that the apparent dictates of science must be studied in the broad light of practical experience. Science does not err, but we err in the interpretation of her teaching, and in the present instance we err in taking too limited a view of the laws governing the elimination of lead poison. A short review of the progress of lead poisoning helps us to understand this. When lead is introduced into the body in dilute solution, as in drinking water, for a time no symptoms supervene because the alimentary tract casts the poison nearly all off as an insoluble organic compound. But it is not all passed out: a little is absorbed in the form of a soluble albuminate of lead which circulates in the tissues and in turn is passed off by the kidneys and largely by the bowels. In time the tissues become exhausted and instead of a soluble albuminate we find an insoluble albuminate which is stored up in the tissues. The intestinal tissues suffer especially and now the symptoms become severe. If no more of the poison is injested the tissues regain their power and particle by particle the insoluble lead albuminate is changed into a soluble albuminate which passes off by the kidney and in great part by the bowels. When the poison reaches the bowel it is changed into an insoluble sulphur compound. Now if the bowels be kept open, preferably by a sulphate aperient, elimination proceeds at a rate which does not disturb the equilibrium. However, if, instead of watching nature, we step in and try to take her place, as in exhibiting iodide of potassium, we run the risk of causing a too rapid elimination and the poison reaches the bowel in larger amount than that organ is able to cope with, and the result is a re-absorption of the lead and a second deposition in the tissues with the former distressing symptoms. Iodide of potassium then must be employed with caution. The treatment found most useful consisted in giving a mixture of Epsom salts with tincture of opium, tincture of ginger, and chloroform water till the acute symptoms passed off, when the patient was instructed to take a dose of Epsom salts twice a week and to suck an orange or lemon every day in addition to the preventive measures. Magnesium sulphate acts beneficially in lead-poisoning in two ways: (1) by clearing the bowels and so aiding elimination; and (2) by supplying the sulphur element necessary for the formation of the insoluble lead salt. The employment of a calomel purge or the old blue pill and black draught in biliousness furnishes us with another example of the apparent discrepancy between pathology and pharmacology. Calomel and blue pill and black draught were the stock remedies of our forefathers in bilious troubles so-called and they even received the sanction of poets and philosophers. Yet how rudely did Hughes Bennett and Rutherford in their extensive and accurate experiments on the secretion of the bile trample all the old traditions under foot and declare that these remedies had no action in bile secretion. But the fault lies with the pathologist, for biliousness has nothing to do with the bile. Still, the remedies I speak of are of the highest service in the treatment of the condition designated by the name "biliousness," and, curiously enough, the resinoid principles known as hydrastin, podophyllin, leptandrin, iridin, and euonymin, which Rutherford proved to be biliary stimulants, have not been found of especial benefit in this distressing affection. The beneficial action of the mercurials is explained by the reflex and actual stimulation of the kidneys and the alimentary tract whereby the products of auto-intoxication are rapidly expelled. We still go on prescribing the old remedies and we still find they do good.

The exact pathology, we may take it, is unknown, for Sir William Gairdner with his vast experience has recently asked, What *is* a bilious attack?

Mention has already been made of perchloride of iron as a remedy in erysipelas and poisoned wounds. The treatment was introduced by the Bells nearly 100 years ago and was, and is still, prescribed in the two named conditions by a large section of the Edinburgh school. And these very men would scruple about giving iron in maladies closely related to erysipelas and accompanied by a chain of symptoms which are spoken of as inflammatory. The teaching is that we should not exhibit perchloride of iron in cases of loaded tongue and disordered alimentary tract, conditions which we often find in erysipelas and poisoned wounds, and still we find the iron highly useful. Till recently pathology and treatment appeared to be directly opposed to each other on this point. The dark points have now been made light and erysipelas and similar affections we know are not to be feared because of the inflammation which they set up but because of the poisons which circulate in the patient's tissues; and we further know that perchloride of iron is within certain limits a direct or indirect antidote to these poisons. I may be pardoned if I point out that for once pathology has lagged a long way behind therapeutics.

On almost parallel lines run the pathology and therapeutics of peritonitis. At the beginning of the nineteenth century practitioners looked upon peritonitis as an inflammatory affection pure and simple and one that was to be treated by purging. So far so good; but as the century advanced the treatment was changed while the general teaching as to the exact pathology remained the same as when purging was advocated. Instead of Epsom salts opium was administered in large and continued doses, the object being to quieten the movements of the bowels and appendages that the diseased parts might have a chance to recover. One wonders if John Hilton's "Rest and Pain" had anything to do with the universal adoption of opium and the same widespread banishment of purging. If peritonitis is, then, a highly inflammatory disease we may take it that purging is useful and, to put it generally, opium in the large doses advocated is a bad line of treatment—that is, judged by our known therapeutic standards. Such was the treatment employed till Lawson Tait, brushing aside all the details which so often bewilder us in our treatment, boldly said that if patients are subjected to the purgative treatment *threatened* peritonitis (from whatever cause) stands the best chance of being prevented. We must bear in mind the words "threatened peritonitis," for they not only clearly define the position which Tait took up but they are invaluable in impressing upon us the necessity of trying to avert the onset of the dread disease. I can well remember the shock which I received when I went to assist an old practitioner. We had some severe cases of operative midwifery and on the day after when I reported the heightened temperature, the altered tongue, and the tumid abdomen, my principal at once prescribed a mixture of Epsom salts, bicarbonate of sodium, and nitrate of potassium in peppermint water. This was to be taken till the bowels had operated freely. I looked upon this line of action as rank heresy, but next day on visiting my patients I found them comfortable and the alarming symptoms either gone or subsiding. The same treatment was employed in threatened peritonitis from other causes and often with the same happy result. Opium was not employed till after the bowels had been moved and then only to procure a sound sleep or give comfort to a restless patient. One could not help being a convert.

We may here pause and ask ourselves the question, Why does a saline purge act so beneficially in threatened peritonitis? We shall be the better able to answer this question if we turn to Treves's Lettsomian Lectures for the year 1894.[1] Treves says: "It may almost be said that peritonitis, clinically as well as pathologically, has comparatively little to do with inflammation of the peritoneum. ..... There is about the patient who is dying from peritonitis every suggestion of a poisoned man. ..... So far as the aspect of the patient goes he might be dying from snake-bite or from the poison of cholera." Here we have the pathology in a nutshell and if Treves has not been the first to recognise the exact pathology he has certainly been the first to put it into language which we all can understand. Our forefathers then who purged in peritonitis because they believed they had an inflammation to deal with were wrong in their pathology but right in their therapeutics. The saline purge by stimulating the intestinal glands and neighbouring parts and by clearing off noxious materials might save the patient from being poisoned. A purge is another method of flushing or cleansing the peritoneum and adjacent parts. How does opium stand in the light of the new pathology? It quietens the nervous system and we must allow that that is something, but if pushed there is the greater risk of the patient absorbing the poisons of his own body in sufficient amount to cause death. Opium must not be looked upon as a curative agent. It relieves the pain as no other drug does, but here its mission ends. We must bear in mind that we have a poison to get rid of and a purge at the onset may effect this, but not always.

In medicine, as in everything else human, there is the tendency to extremes and of late there has been the extreme avoidance of opium in abdominal affections accompanied by pain. Surgeons especially sin in this instance and say that "opium masks symptoms." I may safely say that this is a fine point, for if there be any serious organic mischief causing the pain neither opium nor any other drug will for long keep pain in subjection. While I am on the subject of elimination, another class of diseases or symptoms arises before my mind. These are puerperal convulsions, uræmic convulsions, and tuberculous meningitis. In them there is the tendency to serious or fatal coma and opium or morphine have for long been considered incompatible with the sound treatment of these affections. Looked upon as a general rule this is right, for morphine, as we are aware, checks waste and hinders the elimination of the poison or poisons causing the convulsions. But the man who adheres too strictly to this law may find when too late that the treatment of the immediate symptoms is of far more importance than the treatment of the remote cause, for the convulsions attending the pregnant woman or the kidney disease and the sleeplessness and irritation in the tuberculous meningitis may be of far more immediate danger than the coma we fear so much. The nervous and muscular waste dependent on the convulsions and restlessness throws other poisons into the economy, and hence a single or a second full dose of morphine may obviate this danger and give us time to consider how best we can effect the primary object we had in view—namely, getting rid of the cause of the symptom or symptoms. A study of the laws of compatibility and incompatibility teaches us that in the practice of medicine we may often have apparently to break through all law and order. But the breach is only apparent, for on looking at the subject in all its outs and ins we may find that we are doing the best for our patients and this is what the wise man and the honest man always tries to do.

Leeds.

[1] THE LANCET, Feb. 3rd, 1894, p. 268; Feb. 17th, p. 405; and March 3rd, p. 541.

TUMOURS OF GIGANTIC SIZE.

BY W. ROGER WILLIAMS, F.R.C.S. ENG.

MUCH interest attaches to the study of extreme types of pathological variation. We naturally desire to know the limits within which such variations are possible and the special features they present. In this communication I propose briefly to notice some examples of the largest tumours known.

When we consider the minuteness of the germs whence these big tumours arise and the high degree of organisation they attain it seems not unreasonable to regard the force which originates them as analogous to that which determines the development *ab ovo*. It accords with this that the largest tumours almost invariably spring from those parts of the body where post-embryonic developmental changes are most active—such as the uterus, the ovaries, and the mammæ. Tumours of this kind are nearly always of slow growth and of the non-malignant variety; malignant tumours, being for the most part poorly nourished and of rapid growth, seldom attain the largest size, owing to the supervention of degenerative changes; hence it is among the slow-growing sarcomata that the largest malignant tumours are found. Those who bear these very large tumours—even

when they are of the non-malignant kind—generally present an emaciated, feeble, and cachectic aspect.

TUMOURS OF THE UTERUS.

To the uterus belongs the distinction of having produced the largest tumour on record, the weight of this gigantic formation being 195 lb. It was a cystic myoma, the cystic part containing 17½ lb. of coffee-ground sediment. The abdominal distension was enormous, the patient measuring 6 ft. at the level of the umbilicus. The subcutaneous veins were very prominent and the skin over its lower part was œdematous and eroded. The patient was under the care of Severanu of Bucharest, who removed the tumour by laparotomy.

Several instances of myomatous tumours weighing over 100 lb. have been recorded, of which the following are the chief examples.

In Hunter's case the patient was a single woman, aged 53 years, who had a huge cystic myoma weighing 140 lb. The abdominal girth was 6 ft. 2 in. The patient without the tumour weighed only 95 lb. She was conscious of having had an abdominal tumour for upwards of 20 years. The tumour had of late inconvenienced her by reason of its great size, but she had never suffered from hæmorrhages. She died from exhaustion after repeated attacks of an intermittent type of fever. The greatest length of the tumour was 4 ft. 7 in.

Stockard's patient, a multiparous negress, aged 55 years, had a cystic myoma of 135 lb. in weight, which contained nearly nine gallons of chocolate-coloured fluid. The measurement round the abdomen was 5 ft. 8 in. This poor woman enjoyed good health until she had attained the age of 43 years, when she first noticed a tumour in the right iliac region. Four years later she was tapped and several gallons of fluid were withdrawn. In about a year's time the abdominal swelling was larger than ever; and when Stockard first saw her a few years later she had an enormous pendant abdominal tumour which reached below the knees and was so heavy that she could neither walk nor work. The skin over its lower part was rough and eroded. She was again tapped, an immense quantity of fluid being removed, but she died from exhaustion on the sixth day after the operation. The solid part of the tumour weighed about 30 lb. It was attached by a pedicle an inch in diameter to the posterior part of the fundus uteri, which also contained an interstitial myoma. A mucosal polypus projected within this part of the organ. Besides these lesions there were a small myoma of the left tube, a small cyst of the corresponding broad ligament, and the left ovary was converted into a cystic tumour.

The largest solid tumour known to me is a uterine myoma—removed by McIntyre—which weighed 106 lb. The person who bore this colossal growth was a coarse, masculine-featured woman of medium height, aged 38 years. The circumference of the abdomen at its largest part was 50 inches. The great weight and bulk of the tumour made walking very difficult. The patient first noticed commencing abdominal enlargement when she was 32 years old. Paracentesis had been performed on several occasions, but only blood had come away. In the course of laparotomy for removal of the tumour it was noticed that hæmorrhage from the abdominal wall was very free, enormously distended blood-vessels requiring the application of numerous pressure forceps. The tumour was everywhere extensively adherent. A thick, heavy pedicle was with difficulty isolated, transfixed, and ligatured, and the tumour was then cut away. The patient unfortunately succumbed to septicæmia on the fifth day after the operation.

Several examples of solid myomata, weighing from 40 lb. to 70 lb., have been reported; and there are some good specimens of tumours of this kind in the Hunterian Museum.

TUMOURS OF THE OVARY.

In an interesting paper entitled "Some Remarks on Abdominal Surgery in China" Dr. Elizabeth Reifsnyder of Shanghai has described the largest ovarian tumour extant. This colossal growth—which weighed 169 lb.—was removed from a small Chinese woman, aged 25 years, who without the tumour weighed only 77 lb. Her height was only 4 ft. 8 in. but round the abdomen she measured 5 ft. 9 in. The tumour reached to her knees and made walking almost impossible. The lower limbs, back, and the lower part of the abdominal wall were œdematous, and both legs were ulcerated. She had been married for six years but had never been pregnant. Some abdominal enlargement was first noticed soon after marriage. The catamenia appeared at 15 years of age and continued regularly for a few months, when they ceased entirely. During the removal of the tumour by laparotomy it was found to be extensively adherent to the abdominal wall. It consisted of one very large cyst, which contained 88 quarts of brownish fluid, and of a small cyst. The empty sac weighed 6½ lb. It had a long pedicle which was about two and a half inches in thickness. The patient made a good recovery.

An example of a very large multilocular ovarian cystoma, weighing 149 lb., has been reported by Briddon of New York. The patient was a married woman, aged 36 years, who at the age of 23 years gave birth to a child after normal labour. Menstruation had been normal until six months prior to her coming under treatment, when the catamenia ceased. Some enlargement of the lower part of the abdomen on the left side had been noticed for six years, and during the last 18 months the increase had been rapid. Since then respiration and locomotion had been impeded. When first seen the patient was pale, sallow, and emaciated, with well-marked *facies uterina*. There was great abdominal distension, the girth being 5 ft. 4 in. The veins of the abdominal wall over the tumour were greatly enlarged and tortuous. The lower limbs were œdematous. Laparotomy was performed under ether. The abdominal parietes were exceedingly vascular and the cyst wall was firmly adherent to them. The tumour was composed of numerous large cystic loculi, many of which were opened and evacuated, several gallons of brownish fluid escaping. The adhesions with adjacent structures, especially with the cæcum and colon, were so dense that the tumour could not be removed. The margins of the opening made into it were therefore stitched to the edges of the laparotomy wound, eight large rubber drainage-tubes being introduced into the latter. The patient died on the fourth day after the operation, apparently from septicæmia. At the necropsy it was found that many large cystic loculi had been unevacuated being bound down in the pelvis by firm adhesions. The right ovary and the uterus were normal.

In a similar case reported by Rodenstein the tumour weighed 146 lb. and it reached from the patient's breasts to her knees. The abdominal distension was enormous. The tumour was a multilocular cystoma. No operation was performed in this case. The patient was 45 years of age.

Of Spencer Wells's 1000 ovariotomies the largest tumour removed weighed 125 lb. This occurred in the person of a single woman, aged 53 years. There were parietal, pelvic, and intestinal adhesions. The pedicle was clamped in the abdominal wound. The patient made a good recovery and was alive and well when last heard of eight years after the operation.

Instances of ovarian tumours weighing over 100 lb. have been published by McGillicuddy, Estes, Kelly, Goodall, and others.

Very large cystomata have been met with in young girls. In Dayot's case the patient was 17 years of age. She could hardly move from the recumbent position on account of the great size of the tumour, which embarrassed respiration. The abdominal girth was 5 ft. 11 in., and the tumour was three feet in length. The tense and glistening skin of the abdominal wall was furrowed by numerous veins, some of them as large as the little finger. Fluctuation was readily obtainable over most of the tumour. The patient was emaciated, and she suffered from vomiting, constipation, and frequent micturition. The abdominal enlargement was of two years' duration. During abdominal section 15 quarts of ascitic fluid escaped from the peritoneum; 65 quarts of thick brown fluid were evacuated from the cyst, which was adherent to the abdominal wall and to the adjacent structures. Owing to this cause the operation lasted two and a half hours. The patient made a good recovery. Six months later she had become a fine-looking girl and was better in health than she had ever been before.

Stone reports having successfully removed an ovarian cyst weighing 81½ lb. from a girl, aged 15 years, and Cullingworth removed a similar tumour weighing over 60 lb. from a girl 17 years of age.

Ovarian dermoids, as a rule, do not attain a very large size, but some remarkable exceptions to this rule occur. Skene Keith reports having successfully removed a tumour of this kind weighing over 100 lb. The patient was 55 years

of age and she had been aware of the presence of an abdominal tumour for the last 11 years. It was diagnosed by several medical men as a myoma of the uterus and nothing was done. When first seen by Keith the patient was confined to bed and could lie only on her back. The tumour was tapped, 75 lb. of fluid being evacuated. A few days later laparotomy was performed and the cyst was removed. There were no adhesions except in the pelvis. Hairs grew from the interior of the cyst. The opposite ovary also contained a small dermoid. Six weeks after the operation the patient was doing well.

Halliday Croom met with an ovarian dermoid weighing 91 lb. and Thornton with one that contained 86 pints of fluid.

Some years ago I successfully removed a very large tumour of this kind from a woman, 46 years of age. The patient is still alive and well. The tumour was a thick-walled unilocular cyst of the size of a large football, and it contained about half a gallon of thick peasoup-like fluid in which were embedded numerous large masses of putty-like substance, some of which contained balls of hair. The tumour was parasitic in the great omentum and adherent to adjacent parts. It was connected to the left angle of the uterus by a fibrous strand of about the size of an ordinary lead pencil. The patient was the mother of two children, the last confinement having taken place 12 years before she came under my notice.

TUMOURS OF THE MAMMÆ.

Among the largest mammary tumours must be reckoned those which result from that mysterious disease called "diffuse hypertrophy." In an instance of this kind reported by Durston in which both breasts were involved the left weighed 64 lb. and the right 40 lb. The person affected was a short, fair-complexioned woman, nearly 24 years of age. Having suffered for some months from complete suppression of the catamenia she noticed that the breasts suddenly became enlarged. The swellings increased with such rapidity that she was soon obliged to keep her bed. During the last two months of her existence the increase was even more rapid than before and ulcers formed on the lower parts of the enlarged organs. Loss of appetite with progressive emaciation soon set in, and she died from exhaustion about four months after the onset of the disease. On examination of the enlarged organs after death it was found that they resembled the normal mammæ, from which they differed only in their great size.

Robert and Amussat have described an example of great mammary enlargement in which the stress of the disease fell on the fatty tissue of the affected organs. Their patient was a young woman in whom the catamenia first appeared at the age of 18 years but four months later amenorrhœa supervened. Shortly afterwards both breasts became swollen and tender. In the course of two years they attained an immense size, reaching to the knees. On account of the great weight of the breasts the patient was obliged to maintain the recumbent position. She was emaciated, but otherwise her health was fairly good. Both of the enlarged parts were amputated, at a few weeks' interval. From these operations she speedily recovered, with marked improvement in her general condition. After removal the left breast weighed 30½ lb. and the right 20½ lb.; the weight of the patient without the tumours was 101 lb. The enlarged breasts consisted chiefly of fatty tissue, in which were embedded excessively hypertrophied glandular lobules.

Billroth has met with a very large retro-mammary lipoma which pushed the mammary gland before it, and extended as low down as the pelvis, its greatest length being 43 centimetres. The person affected was a multipara, aged 34 years, and the tumour was of six years' duration. The diseased part was successfully removed but unfortunately the tumour was not weighed. Its altogether unusual dimensions are obvious from the drawing which accompanies the report of the case.

Next to these hypertrophic formations it is among the neoplasms usually described as adeno-sarcomata and adeno-fibromata that the largest mammary tumours are met with. Many specimens of over 20 lb. in weight are on record. In the following remarkable instance by Velpeau the tumour was of truly colossal proportions. The history of the case is as follows:—

A married woman, aged 54 years, first noticed a tumour in her right breast when 50 years of age, which in the course of three years attained to the size of a man's two fists, and then increased rapidly to its present gigantic size. The tumour presented as an enormous pendulous, lobulated mass, which hung from the right mammary region, reaching to the knees. The overlying skin was congested, eroded in places, and marked by numerous large veins. Some parts of it felt solid, others cystic. On tapping it one and three-quarter quarts of fluid were evacuated. The patient was weak and emaciated and refused to have the tumour removed. Shortly afterwards she died from marasmus. She only ceased to menstruate at the age of 52 years. After death it was found that the morbid mass weighed over 44 lb.

I have had under my care a woman, aged 55 years, who had a similar tumour of over 20 lb. in weight. It was of 15 years' growth. When I saw her gangrene was evidently impending and I advised its immediate ablation. This the patient declined, as she was persuaded by a quack "that the tumour was coming away by its roots." Extensive gangrene set in and after having endured horrible sufferings for some months she died from exhaustion without being rid of the tumour, of which she might have been completely cured by operation.

A smaller tumour of the same kind, and nearly as large as a man's head, has also come under my notice. The patient was a married woman, aged 57 years, and the disease was of two years' duration. It was successfully removed, together with the breast.

Clifton.

ON THE REGENERATION OF NERVES.[1]

BY ROBERT KENNEDY, M.A., B.Sc., M.D. GLASG.

THE subject was treated under the following heads:—

1. A short historical and critical review of the books and papers which have appeared on the subject from the time of Cruikshank (1776).

2. Clinical reports of four cases of secondary suture of nerves as follows:—(1) Suture of the median and ulnar nerves six and a half months after division in the middle of the forearm. There was total loss of sensation and motion in the area of distribution in the hand and marked atrophic changes. Three days after the operation sensation commenced to return; by the nineteenth day touch was correctly localised on all parts of the fingers and by the end of the first month sensation was almost perfect. Improvement in motion was slow and imperfect. (2) Suture of the median three months after complete division above the wrist. Sensation was lost in the median distribution and opposition of the thumb was impossible. There was marked atrophy of the thenar eminence. Two days after the operation sensation commenced to return. Both sensation and motion speedily improved and by the end of a year recovery was almost perfect. (3) A case in which the median, musculo-spiral, and ulnar were involved in cicatricial tissue at the seat of fracture at the elbow-joint; excision of portions from the median and musculo-spiral and suture two months after the accident. There were total anæsthesia in the area of distribution of the affected nerves and paralysis of the muscles. Sensation after the operation commenced to return on the fourth morning but made slow progress. The case was under observation for six weeks only, at which time no improvement had occurred in motion, but sensation was present in the fingers. (4) Suture of the ulnar nerve 18 months after division. Sense of pain was totally lost in the ulnar distribution. Five days after the operation sense of pain returned in the little finger and by six weeks sensation was almost perfect, although motion had not improved.

3. Deductions from the results of operation.—From the above results Dr. Kennedy concluded that the early return of sensation must be regarded as indicating a restored conductivity of the divided nerve. He held that the theories which had hitherto been advanced to account for early return of sensation apart from reunion of the nerve were inapplicable to cases where *early* return of sensation occurred from suture performed after the lapse of *several months* from the time of section. The imperfect return of motion he took to be fully explained by the fact that the muscles had undergone great trophic change, or indeed total

[1] Abstract of a paper communicated to the Royal Society for the author by Professor McKendrick, F.R.S.

destruction, and that therefore their restitution must be slow or might even be impossible.

4. Microscopical examination of the portions removed previously to suture.—Both the central and peripheral ends of nerves which had not reunited in any way contained young nerve fibres grouped in bundles, each bundle containing, as a rule, many fibres. The fibres contained an axis-cylinder lying in the centre of a clear, well-defined zone, which, again, contained a granular, myeline deposit, while spindle-shaped nuclei were attached to the sides of the fibres at frequent intervals. Where the ends of the nerve were united by a cicatricial segment without conductivity being restored the examination of the segment showed a dense network of connective tissue containing in its meshes bundles of young fibres. The portions excised from the nerves involved at the seat of fracture showed at their central ends a normal structure, but elsewhere no trace of old myeline fibres or of degenerated fibres, but the section was made up of young fibres in bundles, which bundles were of only slightly greater diameter than the old myeline fibres and often surrounded by a delicate sheath. At the point of transition from old to young fibres many of the old myeline fibres contained an enlarged nucleus, with one or two distinct young fibres lodged between the sheath of Schwann and the myeline sheath. In other cases the number of young fibres lying in a similar position was greater. All stages up to complete replacement of the old myeline sheath and axis-cylinder by young fibres were found.

5. Deductions from the microscopical examination.—(1) Degeneration.—(*a*) That there was no evidence of ascending degeneration of the kind described by Krause after interruption of a nerve. (*b*) That the old axis-cylinder and myeline sheath were destroyed in the peripheral segment and in the ultimate portion of the central segment. (2) Regeneration.—(*a*) That young nerve fibres were developed in the peripheral segment as well as in the end of the central segment and that even while there was no connexion between the two ends. (*b*) That these young nerve fibres originated within the old sheath of Schwann from the protoplasm and nucleus of the interannular segment. The spindle-cells formed from the protoplasm and nuclei of interannular segments elongated and united to form protoplasmic threads, with the elongated nuclei attached to their sides. The central portion of the protoplasmic thread developed into the axis cylinder, while myeline was deposited in drops in the protoplasm surrounding the newly formed axis-cylinder. The protoplasm in which the myeline was deposited remained with the nucleus as the neuroblast of the new interannular segment. (*c*) That so long as conductivity of the nerve was not re-established the development of the fibres proceeded only to a certain stage, and as the new fibres three months and eighteen months subsequently to division presented identical characters this stage might be regarded as a resting stage depending for its further development on re-establishment of function. (*d*) That cicatricial intercalary segments reuniting the ends of a divided nerve might be permeated by young fibres from end to end without re-establishment of function if the amount of cicatricial connective tissue present in the mass was sufficient by its pressure to prevent the passage of impulses.

Glasgow.

A CASE OF ELEPHANTIASIS SCROTI COMPLICATED BY A LARGE HERNIA; OPERATION; RECOVERY.

BY W. M. ELLIOTT, M.D. R.U.I., F.R.C.S. EDIN.,
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THE co-existence of a large scrotal hernia with elephantoid disease of the scrotum is generally regarded as a bar to operative cure of the latter. But a patient afflicted with a mass hanging from his pubes to his knees is a burden to himself and generally to his relatives, and he is usually willing to run some risk for the sake of relief. The operation for elephantiasis alone is a simple procedure, but the presence of a hernia in the mass is certainly one of the gravest complications that can occur. Although I have very little hope that the hernia in this case has been permanently cured, still I feel confident that it cannot again acquire its previous bulk, and the patient is at any rate relieved of his elephantiasis, though at some cost.

The patient, a negro of fine physique, aged about 40 years, was admitted into the Colonial Hospital, Elmina, on June 19th, 1895, with a large scrotal tumour, which appeared to consist of (1) a left inguinal hernia, irreducible, the capacity of the sac being apparently over a quart; and (2) elephantiasis scroti with the usual hydrocele of both testes. The tumour hung down to four inches below the knees. The patient gave a history of six years' enlargement of the scrotum, but could give no information as to the duration of the hernia apart from the tumour as a whole. The penis was not deeply buried; testicular sensation was present on both sides. The patient was very anxious that something should be done for him and on consultation with my colleague Mr. Murray it was decided to deal with the hernia as a preliminary to amputation of the scrotum.

On July 7th the patient was placed under chloroform and a five-inch incision was made over the hernia. The tissues were carefully divided and a few small vessels were taken up; the sac was laid open and was found to be of greater capacity than was expected. The sac wall was very thick and was composed of strong, tough, white, fibrous tissue. On opening it an unexpected and rather perplexing discovery was made in the shape of a large pink-white glistening mass which presented somewhat the appearance of a partially distended stomach as seen at a post-mortem examination. This object was about 10 inches long and four inches in diameter, somewhat curved, heavy, and smooth. At each extremity intestine was seen entering or leaving and on percussion two different notes of resonance were produced. The mass evidently consisted of coils of gut agglutinated into one solid piece, presumably by an inflammatory process long extinct. Other coils of normal intestine were also found in the sac. Although the abdominal ring was large enough to admit three fingers the hernial contents were too bulky to be returned through it. The original incision, which had previously been extended downwards with a view to ascertaining the exact relations of the large sac, was now extended upwards through Poupart's ligament into the abdominal wall for about two inches. The incision now measured 11 inches. The contents of the hernial sac were placed in the abdomen with some difficulty, but as the entrance of such a large mass of tissue into a cavity unaccustomed to its presence caused very apparent distension of the abdomen and some appearance of collapse on the part of the patient the judiciousness of the operation was at this stage rather doubtful. The abdominal part of the incision was then closed; the middle third of the sac was detached from its surroundings and removed; and the neck of the sac was twisted and deep sutures were passed through it and the overlying structures. The lower part of the sac which was adherent to the left testis was dropped back into the scrotum and the scrotal incision was closed, a counter opening having been made through the back of the scrotum for drainage purposes. As the result proved, the spermatic cord had been severely handled.

For 11 days after the operation the symptoms were those of progressive toxæmia. At first there were tympanites and abdominal tenderness, which disappeared on the fourth day, and the patient began to exhibit a high temperature, gradual emaciation, a dirty tongue, irregular muscular twitchings, and a profuse foul-smelling, dirty-brown discharge from the posterior scrotal opening. There was much difficulty in keeping the parts clean owing to the large mass which had to be manipulated. The long incision had healed by first intention in its deeper layers and the superficial layers were granulating in a healthy manner. Owing to the serious condition of the patient it was necessary to explore the source of the foul-smelling discharge, and I proceeded to the removal of the scrotal mass. On July 18th a tourniquet was placed round the neck of the tumour, avoiding the penis. On incising the scrotum it was found that the discharge had come from the lower third of the hernial sac which had been left in the scrotum and which had completely necrosed, the necrosis involving also the left testicle. The cord was divided high up and the testicle and sloughing sac were removed. The right testicle and cord were then exposed, the hydrocele (about four ounces) was tapped and the parietal layer of the tunica vaginalis was removed. A flap was then cut from the right side of the scrotum sufficient to cover the remaining testis,

the elephantoid mass was amputated, the testis was sutured lightly to the face of the stump and the flap brought over it and secured in place by silver sutures. There was but little arterial hæmorrhage considering the size of the tumour and only a few small arteries required ligature. There was considerable venous bleeding with oozing of lymph from the blubbery elephantoid tissue.

The subsequent history of the case while in hospital is that of the slow healing of the wound and the gradual recovery of the patient from the prostrate condition into which he was thrown by the septicæmia preceding and the loss of blood accompanying the second operation. The healing of a wound made through elephantoid tissue is particularly slow, first intention even under strict asepsis being very rare and even granulations are weak and of slow growth. The scrotal remains gradually contracted in size. The patient slowly recovered strength and was discharged on August 28th, 41 days after amputation of the scrotum, having been in hospital 70 days. McLeod gives from six weeks to two months as the period for healing after amputation without flaps. I am aware that McLeod, the leading authority on the operative treatment of elephantiasis scroti, condemns the flap operation. A few weeks ago I had an opportunity of seeing one of my patients on whom I had performed scrotal amputation by flaps cut from affected tissue 16 months previously. The scrotum which before operation weighed about 60 lb. had now contracted to the size of the closed fist, there was no sign of recurrence, the patient's sexual power was restored, and he was on his way to Kumasi as a Government carrier with a load of 60 lb. on his head.

Gold Coast.

THE PREVENTION OF SICKNESS AFTER ANÆSTHETICS.

BY J. BLUMFELD, M.D. CANTAB.,

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A PATIENT'S dread of operation is often due more to his fear of anæsthetics than to that of the operation itself. And his dread of the anæsthetic is not because of its danger, for he is aware that, correctly chosen and skilfully given, it is practically safe, but because of the sickness which he anticipates as an inevitable consequence. Now, after-sickness from anæsthetics is less common than is usually supposed and by careful attention to several details it can be made less common still. Ether is usually particularly dreaded because of the sickness expected afterwards. Yet the truth is that if the operation takes not much more than 20 minutes the vast majority of patients are not sick at all if the ether is preceded by gas and is given with careful regard to using the smallest possible quantity consistent with good anæsthesia. Moreover, one important point is often overlooked—viz., that the sickness often precedes the return of consciousness. In such a case the patient, of course, experiences no unpleasantness from the sickness and if questioned next day replies that he was not sick at all after the anæsthetic. Attempts to prevent or counteract after-sickness by the use of drugs have hitherto not been encouraging. The drugs that have been chiefly tried—morphia, cocaine, atropine, and chloral—have either not prevented vomiting or have given rise to such alarming symptoms that it is obviously better to run the risk of vomiting than of its remedy. At present it must be admitted that we have no direct antagonist to ether and chloroform in this respect. But the vomiting sometimes caused by these anæsthetics, though it is probably in the main an effect of their action on the brain, is not entirely so, and it is with regard to these other matters also concerned in the causation of the vomiting that we can do a good deal towards its prevention. That much can be done to this end is obvious from the fact that after-sickness is both more frequent and more formidable when the anæsthetic is not administered by someone who has frequent experience in the matter. The reason for this is simple. One of the chief points concerned is the amount of anæsthetic that is used. Now with an inexperienced administrator this is usually too little or too much. If too little the operator has an anxious and uncomfortable time during operation; if too much the patient suffers severely afterwards. There is nothing in the administration of anæsthetics that requires experience more than to know whether to press or to diminish the anæsthetic. To know this the administrator must be able to realise the degree of anæsthesia that has been reached. And it is impossible to do this without constant opportunities for observing patients under an anæsthetic. Consequently, misled by some apparent indication of "coming round," the inexperienced administrator pushes the anæsthetic to a needless extent and the patient is proportionately sick afterwards. On the other hand, fears are aroused that the patient is too deeply under, the anæsthetic is withheld too long, and the operation is interrupted by an attack of coughing or vomiting.

Before considering the matter in detail let us see what is the proportion of patients who are actually sick and whether from observing their behaviour during and after anæsthesia we get any hint towards the prevention of after-sickness. For this purpose I have notes of a consecutive series of 572 cases. These I have either personally observed throughout or have had accurate accounts of their behaviour after the anæsthetic from observation carefully made by the nurse in charge. The cases include both hospital and private patients, the great majority of the former being operated on at St. George's Hospital and a few at the Grosvenor Hospital for Women and Children. They may for the present purpose be divided into three groups. There are (1) those patients who do not vomit at all; (2) those who vomit only before return of consciousness—these if questioned say they are not sick after their anæsthetic; and (3) those who vomit after consciousness has returned, or both before and after. Patients differ greatly as to the length of time that elapses before consciousness returns. As a rule, of course, the longer the administration—i.e., the more of the anæsthetic absorbed—the longer is the interval before wakefulness returns. But whereas some patients will sleep for hours after a short administration others will begin to come round within five minutes of the end of an administration lasting over an hour. Generally speaking, if the whole administration has not lasted much more than half an hour patients begin to come round or to vomit within five minutes. And this is what we should aim at. When a patient is safely back in bed the sooner he begins to come round the better. If he remains comatose for a long time it generally means that he has had an unnecessary amount of anæsthetic and will probably be sick in proportion. Those of class (1) have voluntary movements of the head from side to side, then more or less sensible and articulate speech, and gradually become more awake, or else lie back and sleep again, waking up sensible an hour or so later. In patients of the second class consciousness generally begins to return very shortly after the vomiting; there are sometimes two or three bouts of vomiting before the patient is conscious. In patients of class (3) the number of times that vomiting is repeated varies greatly. Some will have four or five attacks during the 12 or even 24 hours that follow the operation. After an operation at 2 P.M. it not unfrequently happens that a patient who has come round and feels comfortable enough wakes up in the middle of the night and vomits, this being very likely his one and only attack. Such an attack may certainly be expected if unsuitable food is given, even eight or nine hours after return of consciousness.

The proportion of patients free from after-sickness.—Of the 572 patients there was no after-sickness in 143, exactly a quarter of the whole number. In the remaining 429 after-sickness preceded the return of consciousness and may therefore be disregarded from the patient's point of view in 50 cases. So far therefore as the patient's comfort is concerned very nearly one third of all the cases (193) may be regarded as free from after-sickness.

The nature of the patient.—Can we say beforehand whether or not a particular patient will be sick after taking an anæsthetic? I think we cannot, although when we give him the anæsthetic we can generally tell before the end of the operation how he will behave afterwards in this respect. It is at present within certain limits impossible to say why of two patients who undergo the same operation under the same anæsthetic administered by the same hand one will be sick and the other not. It depends on what, for want of more precise knowledge, we call idiosyncrasy. Just as one man has "a head for wine" while another is easily intoxicated,

in the same way and for equally obscure reasons one patient will be sick after anæsthetics and another not. But the man with a weak head succumbs more easily under certain circumstances and similarly we can to a certain extent influence circumstances in favour of the patient prone to sickness. It is sometimes held that excitable nervous people are more likely than others to be sick after anæsthetics. They are more likely to be restless, noisy, even delirious, during the early stage of returning consciousness and are more likely to suffer from headache at this time, but not, I think, more likely to be sick. Persons who are accustomed to the habitual use of alcohol in large quantity are less often sick than others, although they require larger quantities of the anæsthetic; and I believe liberal use of tobacco to act in the same way; but with this exception we can tell but little beforehand from a patient's temperament or habits what will be his behaviour as regards after-sickness. When we give him an anæsthetic we get two important guides in the matter. These are (1) the extent to which the anæsthetic excites in him the secretion of mucus, and (2) the length of time that he is under the anæsthetic, or, what is much the same thing, the amount of anæsthetic used in his case.

The secretion of mucus.—Ether, and to a slighter extent chloroform, excites secretion of mucus from the pharynx and air passages and of saliva. The extent to which this takes place varies greatly in different individuals and it is not generally possible to foretell it before the administration. As a rule, tuberculous patients suffer more in this respect than others, but with this exception we have not much indication beforehand. Patients who during an operation secrete much mucus are much more liable than the others to be sick afterwards. The reason for this is that although with the head on the side, as it should be, much of the mucus escapes at the side of the mouth and is wiped away, yet more trickles down the back of the pharynx and is swallowed into the stomach. Now, if the vomit of the patients who suffer from after-sickness is examined it is found to consist in most instances almost entirely of mucus. There is generally some gastric juice as well and also bile, but these are in infinitely small quantity compared with the mucus, and bile is often entirely absent. Since, then, those patients who secrete much mucus are particularly sick afterwards and this mucus forms the chief part of the vomit it is rational to suppose that the presence of the mucus is an exciting cause of the vomiting. For in other forms of vomiting in which the main cause is some action on the brain—sea-sickness, for instance—the condition of the stomach plays an important auxiliary part. So, too, with anæsthetics, and we recognise the importance of the condition of the stomach by carefully regulating the food allowed to patients prior to operation. Extending this principle we should take note of the contents of the stomach at the end of operation and in those cases where much mucus is secreted and swallowed get rid of this before the patient becomes conscious. The most convenient way of doing this is to pass a large-bored, soft rubber tube, with a good opening near the end, into the stomach. No extra time is required, the tube being passed as soon as the administration has ceased and the dressings are being applied. From half a pint to a pint of tepid water is poured slowly down the tube through a funnel, and before the patient is to be taken back to bed the funnel is lowered and the water emptied, bringing with it much mucus. I have adopted this plan on several occasions when it appeared advantageous. The result was very satisfactory. Either there was no after-sickness at all, or if this was present it began early and was not repeated with increasing consciousness. Certainly there was always less after-sickness than would have been expected from the patient under ordinary circumstances. For the stomach should, of course, only be washed out in this way in those very cases in which we expect most sickness—in those patients, that is, who secrete much mucus during operation. Care must be taken that as far as possible all the water poured into the stomach is allowed to run out again. A certain amount, depending upon the length of time that it is left in the stomach, appears to be absorbed. By emptying the stomach in this way at the close of operation we are simply imitating the behaviour of those patients who have one copious vomit before the return of consciousness and "come round" comfortably after. If a patient cannot escape without vomiting altogether, as is usually the case when there is much mucus, this is certainly the best course he can pursue. The fact of an excessive secretion of mucus is one of the chief arguments advanced against the routine use of ether. Proper employment of the stomach-tube will render it an argument of little moment and will give us one more reason to regard ether as an excellent general anæsthetic for use in the great majority of cases.

The length of operation.—After the idiosyncracy of the patient the most important factor in determining his behaviour as regards after-sickness is the length of time he is under the anæsthetic. It is the length of time that is important rather than the amount of ether or chloroform used, for several ounces will be used with one man where another would be kept under with the same number of drachms. But at the end of the time the effect produced, the condition which the brain has reached, is presumably the same in each if an equal degree of anæsthesia has been maintained in each for the same time. Now, of the 143 cases in which there was no after-sickness 61 were cases in which the whole administration from beginning to end lasted not more than 20 minutes. This is a proportion of nearly one half. But the proportion of these short operations to the whole number was only one-ninth, showing a great advantage with regard to after-sickness on the side of the short operations. Nowadays, when in most cases there is nothing to be saved as regards shock or hæmorrhage from rapidity of operation as there was before anæsthetics were used, there is still this advantage amongst others to the surgeon who takes as little time as possible consistent with good operating—viz., that his patient runs a better chance of escaping after-sickness. One or two cases may be given here illustrative of the length of time for which patients may be kept under anæsthetics without any after-sickness.

CASE 1.—This was the case of a man who was not of a type usually regarded as favourable for anæsthetics. He was a drayman, aged 39 years, fat and bearded. Mr. Sheild was to operate for the cure of a large complete inguinal hernia. The administration was begun with gas and ether, particularly little gas being used. He went under quietly and ether was continued for 40 minutes. Chloroform was then substituted during the remaining 15 minutes of the operation, which included extensive prolongation of the usual incision and removal of a large mass of omentum. The first signs of returning consciousness appeared 40 minutes after the administration had ceased—rather an unusually long interval. There were irregular movements of the head from side to side and incoherent talking. Consciousness gradually became complete and there was no vomiting or retching. He complained a little of nausea.

CASE 2.—Another instance is that of a man from whom Mr. Allingham removed half of the lower jaw after a preliminary tracheotomy and ligature of the external carotid artery. Gas and ether were given first, ether being continued for a few minutes only, and then chloroform. The whole administration lasted an hour and a half. There was no after-sickness or retching and but little nausea.

In both these cases it will be noticed that chloroform was used for part of the time and we may now consider the question of after-sickness with regard to its dependence upon the particular anæsthetic employed. This will be limited to a consideration of ether and chloroform, for in the vast majority of cases I believe ether, preceded usually by gas, to be the best anæsthetic and where there are reasons for not using this chloroform to be the alternative. From the point of view of after-sickness the A.C E. mixture may be regarded as chloroform. After gas alone sickness is so rare as not to require consideration and gas with air or oxygen for major operations is the best anæsthetic under such special circumstances only that it may here be disregarded. It is often supposed that after-sickness is more to be dreaded from ether than from chloroform. It is true that a larger proportion of persons are sick after ether than after chloroform, but the most severe cases of sickness are seen after the latter, and as a rule the sickness that follows chloroform lasts longer and is more often accompanied by great prostration than that which follows the use of ether. It does not very often happen that one has the opportunity of anæsthetising the same patient with different agents on several occasions, but when this has happened in my experience the result has not pointed to an advantage in either chloroform or ether as regards absolute freedom from sickness. Patients sick after chloroform were also sick after ether and those free from sickness after ether were equally so after chloroform. In both the cases given above chloroform was given after gas

and ether. This is often an excellent succession of anæsthetics for the avoidance of after-sickness as well as for other reasons. Speaking generally, it is best in long operations to substitute chloroform for ether after three-quarters of an hour. There are, nevertheless, plenty of instances in which patients have been under ether for an hour or more without after-sickness. The longest case in my own experience was two hours, the operation being the removal of a widely adherent cystic ovarian tumour. Children, for whom ether is often the best anæsthetic, are particularly favourably disposed to it as regards after-sickness. The following is a case in point.

CASE 3.—The patient was a boy, aged two years. The operation was for radical cure of inguinal hernia. Ether was given from a cone, the whole administration lasting one hour. The patient was in a condition of apparently ordinary sleep for two hours after the end of operation. On awaking the child cried and after some minutes slept again. There was no sickness at all.

As regards the kind of ether to be used I have been able to detect no difference in the extent of, or susceptibility to, after-sickness whether the ether purus B.P. or "methylated ether" (specific gravity 720) was employed, and several patients were anæsthetised on one occasion with the former and on another with the latter with perfectly similar results. The figures showing the number of patients who suffered from after-sickness with gas and ether, gas and ether and chloroform, and chloroform alone respectively are as follows. Of 572 patients treated, 501 had gas and ether, 21 had gas and ether and chloroform, and 50 had chloroform. Of 143 patients who were not sick afterwards 112 had gas and ether, 10 had gas and ether and chloroform, and 21 had chloroform. With regard to the chloroform cases it must be mentioned that a large proportion of them were cases of operations on the eye in which the whole administration was usually only 15 minutes or less. The cases in which chloroform was used after gas and ether were, on the other hand, almost in every instance cases of long operation; the large proportion of patients free from after-sickness is the more remarkable.

The nature of the operation does not seem to affect the question of after-sickness very materially except in two particulars. One of these has already been referred to—viz., the length of time occupied in the performance of the operation; the second concerns the entrance of foreign matter to the stomach and is therefore allied to the swallowing of mucus which has been described as a prominent cause of after-sickness. In those operations, such as that for removal of post-nasal growths or of portions of the tongue or jaw, where some blood is almost inevitably swallowed from the pharynx there is usually after-sickness. This comes on soon after withdrawal of the anæsthetic and the vomit consists mainly, if not entirely, of blood. In the case of adenoids the administration has usually been of so short a duration and the amount of blood swallowed so little that the vomiting is of little consequence. In the other cases it might be worth while, if there was no contrary reason, to wash out the stomach in the same way as for the removal of mucus. Operations upon abdominal organs are not particularly liable to be followed by after-sickness unless there is extensive manipulation of the stomach. After the operation for perforated gastric ulcer, if the ulcer is easily brought to view I have on several occasions seen no after-sickness at all.

The extent to which a patient has to be moved about while under an anæsthetic affects his liability to after-sickness. Care should be taken in this respect that there is as little jerking or bending of the trunk as possible when he is being lifted back to bed; and sudden raising and lowering of the head is also to be avoided. The best position in which to place him when in bed is on the right side with the head and shoulders very little raised. This allows mucus and saliva, or blood if present, to escape. It is also an easier position for him if he has to vomit and is probably better so far as the lungs are concerned than if he is placed flat on the back. It is better not to air the room directly after operation if the patient remains there, but to let him come round in an atmosphere similar to that which he has breathed throughout. After three hours fresh air may be gradually admitted.

Patients vary greatly as to the interval after which they desire and can safely take food. Some can eat with relish and digest effectually a good dinner in the evening when they were operated on in the morning. It is generally best to allow nothing except sips of hot water or of tea or coffee for at least eight hours. Milk, which is not infrequently the first food taken, is particularly apt to set up vomiting. Brandy and soda-water or iced champagne are often most useful if there is much tendency to vomit after return of consciousness and some people find relief in sniffing at strong sal volatile. In the case of children it is easy to overdo the preliminary starvation. An infant who has been kept without food too long before operation may afterwards fall into a condition of alarming collapse. This is quickly remedied by a small supply of stimulating nourishment. Infants should, as a rule, be fed not more than four hours before operation. With adults and older children the interval after the last food should be at least eight hours. There are, of course, cases in which for special reasons these rules must be disregarded. When for any reason a speedy return of consciousness is aimed at nothing helps more than to open the mouth fairly wide with a gag and make sure that breathing is vigorously carried out.

In all the cases referred to above when gas and ether was the anæsthetic used it was given from a Clover's inhaler. In most cases the gas was admitted from a large bag fitted with Dr. Hewitt's valve; in some from a small bag without this. In addition to other advantages there is less chance of after-sickness from gas and ether than from ether alone, probably because of the smaller quantity of ether used in the same time when the former method is employed. Chloroform was given from a Junker's inhaler with simple flannel mask, a drop bottle being sometimes used as well. The A.C.E. mixture when used was given from a cone.

In conclusion, it may be said that some of the chief points to be attended to in the avoidance of after-sickness are (1) use as little of the anæsthetic as possible consistent with perfect anæsthesia; (2) wash out the stomach at the close of operation when much mucus has been swallowed; (3) in long operations substitute chloroform for ether after three-quarters of an hour; (4) move the patient about as little as possible during and after operation; (5) place him on his right side in bed with the head only slightly raised; (6) give nothing but hot, thin liquids in small quantity for at least eight hours after; and (7) do not alter the temperature of the room for some hours. With proper attention to these points one-third of the patients operated on will be free from after-sickness, and for short operations the proportion will be much higher still. In fact, after all administrations up to 20 minutes, or not much longer, sickness will be found to be the exception.

Sloane-terrace Mansions, S.W.

STRYCHNINE POISONING AND ITS DETECTION IN EXHUMED BODIES.

BY WALTER H. HAW, M.R.C.S. ENG., L.S.A.

THE following extract is taken from Taylor's "Principles and Practice of Medical Jurisprudence" (p. 465, edition 1894, edited by Stevenson): "The editor extracted one-sixteenth of a grain from two pounds of the exhumed viscera of a woman (Matilda Clover) more than *six months* after burial, although the deceased had survived the administration of the poison for six hours. There is, so far as he is aware, no other recorded case of the detection of strychnine in this country after exhumation, though two cases are recorded on the continent of its detection after exhumation of human remains."

The subjoined case has occurred in my own practice and will prove of interest in connexion with the above statement. On April 19th, 1898, I was hurriedly called at 6 A.M. by a messenger to attend to a man, a Jew, who was said to be dying. Dressing in haste I went to the house as quickly as possible. On my way I met the messenger, who had preceded me back, and was informed by him that the patient was dead. On arrival I found in one of the bedrooms, lying on a stretcher, the body of a stout man quite dead. He was lying on his back, clad only in a jersey and covered by a blanket. The forearms and arms were resting across the chest. The face and ears were livid and the eyes were partially open. The body was warm and there was no rigidity anywhere except in the masseter muscles, the jaws

being clenched and fixed. There were no signs of violence upon the body and no odour or indications of corrosive poison to throw light on the cause of death. There were no signs of vomiting and from an examination of the body alone there was nothing to indicate the tragedy which had occurred. On the floor beside the stretcher were a pair of *veldtshoens*, a pair of socks, and a pair each of boots, top-boots, and slippers. A tumbler containing a trace of odourless, colourless fluid was shown to me and was said to have been found on the floor near the head of the stretcher. On thoroughly searching the room nothing bearing upon the case was brought to light until the body and mattress beneath it were lifted up, when I found between the mattress, wall, and woodwork of the stretcher a cardboard case labeled "Not to be taken" well within reach of the right hand of the deceased. It could only be reached by lifting the mattress after moving the body. Inside the case was a small corked glass bottle, labeled "strychnine," which contained a small quantity of white crystals resembling those of strychnine. These were found later by a qualified chemist to be pure strychnine.

The history of the case was as follows. A neighbour who was present during my investigation informed me that she was aroused that morning by the wife of the deceased who shouted to her to come over as her husband was in convulsions and dying. On her arrival she was just in time to see the deceased give a gasp and expire. The wife of the deceased told her that the dead man uttered only these words: "I have taken poison." She (the neighbour) found the deceased's arms in a position as though they had been drawn up. She herself had placed them in the position in which I found them.

The wife gave the following history. Her husband was quite well in health on the previous evening but was worried in business matters. He had supper with her and retired to his room (a small bedroom adjoining hers) at about 9 P.M. She retired shortly afterwards and went to sleep. In the early hours she was partially roused by hearing her husband in the room; he attended to the wants of one of the children and moved about the room, but as it was dark she could not see what he was doing. In a short time he returned to his room and she fell asleep. About daylight she was awakened by a strange noise proceeding from his bedroom; it was as though somebody was choking. She rushed to him and found him in the following state. His arms were across his chest, the hands were clenched, and the arms and hands were moving as though fighting, and he was wet with perspiration. In reply to her question he said that he had taken poison. She did not notice anything more, for she was much upset. He spoke no more and died about half an hour after being found.

Before I found the strychnine bottle beneath the mattress I asked the wife to show me all the bottles, &c., in the house, which she did. On a bracket in the corner of her bedroom I found a paper bag containing some "Rough on rats" alone. She said that there should be another small bottle in the bag and later she recognised the strychnine bottle as the one missing from the bag. The only other poisons discovered were an almost full bottle of hydrochloric acid and an unopened bottle of laudanum. Nothing else bearing upon the case was found in the house. Shortly afterwards I was told that the man was entirely ruined in his business and that on the previous afternoon, on being pressed for a small account, he had burst into tears and his neighbours declared that he had become unmistakeably strange in his manner of late. I have given these details because upon them I formed the opinion that the case was one of suicide by strychnine and although it was discovered before burial that the man's life had been insured about one year previously and that suicide before the expiration of three years from the date of commencement invalidated the policy the authorities accepted that opinion and dispensed with a post-mortem examination. The following considerations led me to my opinion.

The death may have resulted from:—1. Natural causes. These were excluded by (1) the fact that he had passed for insurance about one year before; (2) the history of good health up to 9 P.M. on the previous evening; (3) the wife's account of the death; and (4) the presence of a bottle labeled "strychnine" in his bed. 2. Murder. This was excluded by (1) there being no marks of violence upon the body; (2) the history of the death, if due to poison, pointed to a convulsive poison; the only convulsant found was strychnine which, if given with criminal intent, would have allowed the deceased time to call for assistance, which he did not do; and (3) there was no evidence that anything had been given to the deceased. 3. Accident. This was excluded by the position of the bottle under the mattress. 4. Suicide. (1) The evidence is against natural causes, murder, and accident, and therefore is in favour of suicide; (2) financial troubles and change in conduct of the deceased favour suicide; and (3) in a minor degree the evidence that he was during the night in the wife's room and that a bottle of strychnine was abstracted from the room and was later found corked and inside a cardboard case beneath the mattress within reach of his right hand is in favour of the theory of suicide. 5. Death from strychnine poisoning. (1) Abstraction of a bottle containing strychnine from the adjoining room; (2) discovery of a bottle of strychnine (recognised as the missing bottle) in the bed of the deceased; (3) the wife's account of the death (the presence of convulsions, perspirations, and ability to speak); (4) early death after discovery of illness; and (5) post-mortem appearances, although not typical of strychnine poisoning, were, as far as they went, consistent—e.g., the rigidity of the jaws and the lividity of the face and ears. The view that death had been caused by strychnine was confirmed by the later discovery of this poison in the remains.

About eight months after the body had been buried a claim was put in by the wife and friends for the amount of the insurance money. This claim was disputed by the company on the ground that the deceased had committed suicide. Accordingly, on Jan. 24th, 1899, I received an order to exhume the body and to send the organs to Dr. Loevy of Johannesburg for purposes of analysis. The exhumation took place on Jan. 26th, 1899, just nine months and one week after burial, every precaution in the matters of identification, sealing of bottles, &c., being taken. The earth of the cemetery was very dry; after removal of the coffin no moisture could be detected except a small quantity which had oozed through the bottom of the coffin. On opening the latter the body was seen to be wrapped up according to Jewish custom and a considerable amount of a light brown powder (carbolic powder) was scattered about inside the coffin. The persons who came to identify declared that from the features they could still recognise the deceased as the man who died on April 19th, 1898. The condition of the body itself was as follows. The skin of the face was black, dry, and shrivelled, the tip of the nose being absent, but otherwise all external parts were recognisable. The top of the head was bald but hair was present round the sides. (The deceased was bald during life.) A brownish moustache was present and the features were recognisable. On the rest of the body, the skin, muscles, and bones were easily discriminated, the skin being in an oily condition. On the back it was decidedly pink in colour. Internally all the organs were easily identified, with two exceptions, the spleen and the right kidney. In the position of the spleen a quantity of reddish-brown material of the consistence of thick porridge and somewhat resembling soft fish-roe was found. The right kidney had apparently disappeared, for a careful search failed to discover either it or any traces of it. All the organs were very soft. The stomach and bowel walls were thin and parchment-like and in places quite transparent. There was a quantity of fatty-looking matter (adipocere) on the left side of the abdomen, near the cardiac end of the stomach. The bladder was intact, covered with fatty matter, and contained about one teaspoonful of fluid resembling urine. On removing portions of the spinal cord it was seen to be quite soft, almost confluent, and in colour black interspersed with dirty white. It was possible to remove the brain as a whole, but it was very soft and similar in colour to the contents of the spinal canal. All the bones were firm and the muscles were lighter in colour than they are shortly after death. The following organs and material were sent to Dr. Loevy for analysis: the stomach, the intestines, the liver, the spleen (remains of), the left kidney, the spinal cord, the brain, the heart, and the fluid from the thoracic and abdominal cavities. In his report the analyst stated that he had obtained one-twentieth milligramme of strychnine from the whole of the material sent to him. At the trial, which took place in March, 1899, before Justice Esser, the company attempted to prove that death had been caused by strychnine taken with suicidal intent, but judgment was given in favour of the plaintiffs on the ground of insufficient proof. On appeal,

however, judgment was given in favour of the company with costs.

The interesting medico-legal points in this case are, first, the condition of good preservation of the body; and second, the fact that undoubted traces of strychnine were found therein after nearly ten months' burial.

Barberton, Transvaal.

FŒTAL ANOMALIES.

BY G. STEWART ABRAM, B.A., M.B., B.C. CANTAB.

THE following cases appear to me to be of interest as showing that anomalous developments of the fœtus are far more common than is generally taught. The ordinary text-books of midwifery devote but little space to this subject and I have been unable to find any statistics showing the percentage of births in which some serious anomaly of the fœtus exists. Galabin, Lush, and Spiegelberg all refer briefly to most of the forms of fœtal monstrosities but they give no information with regard to the frequency of their occurrence as a whole, nor do they express an opinion as to whether they are more generally met with amongst the hard-working or more leisured classes. The cases I am quoting have all occurred in my own practice within the last three years amongst all classes of the community and the first at least seems to be without many parallels.

CASE 1.—In October, 1898, I attended a primipara, aged 24 years. She was delivered at full term after about 12 hours' labour of an anencephalic female monster which was dead. The placenta was adherent and was removed with difficulty. The parents were naturally much distressed and I confidently told them that such an event was most unlikely to occur again. In 1899 the patient was again pregnant. On August 18th I was sent for hurriedly at 11 A.M. She was then from six to seven months pregnant and had been suddenly seized with alarming hæmorrhage. Examination found the os slightly patent, an absence of diagnosable presentation, and a soft mass filling up the anterior fornix. A diagnosis of placenta prævia was made and the patient continuing to have alarming hæmorrhage and becoming much blanched the cervix was rapidly dilated under chloroform, internal version was performed, and a dead female fœtus was delivered. It proved to be another anencephalic monster with a complete absence of the spinal arches from the neck to the sacrum. There was smart post-partum hæmorrhage, for which the patient was injected with saline fluid per rectum, but she has since made an excellent and uninterrupted recovery.

CASE 2.—In February, 1899, I delivered a multipara at full term of a living child who had entire absence of the external abdominal walls over an area extending from the umbilicus to the pubes to the left of the middle line. The abdominal contents were covered by a thickened membrane which bulged to the size of a fist and the umbilical cord at its insertion was spread over a portion of the swelling. At first the sex was doubtful, but post mortem it was found that the apparently imperfectly developed genitals were really parts of a female child's pudendum much stretched and distorted by separation of the symphysis pubis. The child lived four days.

CASE 3.—In April, 1898, I was called by a midwife to the confinement of a multiparous female who had just been delivered of an anencephalic child of the usual type. The other confinements had been normal.

CASE 4.—In April, 1898, also I was called by a midwife to see the newly-born male child of a woman under my care. The mother was a multipara. The child had a very large spina bifida covered by a membranous sac occupying the region of the upper and middle lumbar spines. There was also a wide separation of all the cranial bones to the extent of about half an inch. The child lived for a few weeks.

CASE 5.—In 1897 a woman under my care was delivered at her first confinement of an anencephalic monster exactly similar to Case 3. She has since borne a normally developed child.

All the above cases have occurred within a limited district and in a small midwifery practice. The total number of cases that I have attended in the period referred to has been 223, giving a percentage of nearly 2·5 of anomalous developments of the fœtus.

Reading.

OTITIS EXTERNA TROPICA.

BY P. N. GERRARD, M.D. DUBL.,
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UNDER the above heading I propose to describe a disease which has apparently escaped the notice of the profession "out East" or has been mentally included by them amongst the ordinary inflammatory affections of the external ear which are met with in Europe and which are usually caused by, or accompany, ordinary catarrh of the respiratory passages or occur as a concomitant of various zymotic diseases.

Having suffered recently from the disease and having gone as deeply into the bacteriology of the subject as circumstances would allow I might perhaps be permitted to speak with some certainty with regard to the various stages, treatment, and pathology of this disorder, which I may mention *en passant* is of fairly common occurrence in Singapore and the native Malay States. In my own case the inception of the disease was most insidious, the first symptoms being very slight deafness associated with itching just inside the tragus and around the edge of the meatus, which caused so little inconvenience that the matter received no attention, until one morning the deafness being more marked than usual I passed down a small piece of absorbent wool rolled to a fine point on an ordinary match and was greatly surprised to find the wool soaked through and covered with thin greenish yellow pus. Having poured some warm carbolic oil into the ear, after washing out with warm permanganate of potash solution, I thought no more of the matter until the next morning, when I found the cause of my deafness again to be due to an accumulation of pus and the wool again returned saturated. Similar treatment was adopted and matters remained thus for about five days, until one morning when instead of the usual painless slight deafness a painful throbbing with some narrowing of the meatus and the usual pus prompted me to adopt more stringent measures. I then for the first time sought the cause by inoculating two nutrient agar tubes and placing them in the incubator, at the same time preparing some slides directly from the swab. The pain continued throughout the day and next morning it was intense, accompanied by a feeling of complete collapse without any extraordinary temperature or circulatory disturbance. Poultices gave some relief and strong glycerine of belladonna with liquid extract of opium made the pain just bearable and no more. After two days' poulticing and washing out with 1 in 500 perchloride of mercury solution and hot water (owing to the presence of a bacillus in the agar cultivation) relief came as gradually as the pain had come and after about ten days I felt that the attack was over. Occasional syringing with a weak solution of carbolic acid or permanganate of potash and the application with a swab of 1 to 30 carbolic oil have been all that has been necessary to keep things right, at least up to the present.

Having described the symptoms and progress I now come to the external appearance as described by one of my dressers (Mr. Tamby). The first evidence of any disease apparent was a simple diffuse redness of the parts immediately round the meatus. This lasted until the pain developed, when small but deep-seated furuncles or anthracoid patches appeared which never really suppurated but which were so exquisitely painful that I had each one cut into by a dresser with a tenotome, which gave some relief when the poultices were applied; when one got better another rapidly appeared to pass through similar stages. There was at no time any pitting over the mastoid process but a premastoid gland became enlarged and tender and has never quite returned to the normal condition. The narrowing of the canal was most marked and precluded examination of the tympanum, which, however, I do not believe was affected at any time, although the Eustachian tube was undoubtedly narrowed during the acute stage.

Bacteriology.—The agar tube after 12 hours showed on the sloping surface two very distinct growths, one of a bright orange-colour which was easily recognised as the staphylococcus pyogenes aureus and the other which grew as a whitish translucent film in places and in places as rather large colonies. At first sight I suspected this to be the staphylococcus pyogenes albus but was very surprised to find that it was a bacillus; this fact chiefly has led me to

describe this case, as I believe the presence of a bacillus is unlikely to be suspected in cases of a similar kind and alters the treatment considerably. This bacillus is a rod of about the length of the usual sized tubercle bacillus and about half as broad again, with rounded ends, which stains uncommonly like the diphtheria bacillus with Lufler's alkaline methylene blue, showing a clear pale blue in the middle and deep blue Babes Ernst bodies or spores at each rounded end, probably spores, and in some, about the centre, three or four spore-like bodies may be seen. The Ziel-Neelsen stain gave a negative result for tubercle bacilli. The growth on potatoes unfortunately cannot be reported on as the primitive incubator took a sudden run up in temperature owing to the carelessness of the Chinese attendant and the bacilli had lost all motility when examined the next morning.

A word as to treatment may be permitted, especially in a case where so many varieties have been tried. Personally, I endeavoured to abort the disease in the first place with a 10 per cent. solution of nitrate of silver, which was unsuccessful. Carbolic lotion 1 in 40 was a failure apparently as a bactericide and certainly did not produce the effect which warm perchloride of mercury solution of about 1 in 1000 subsequently did. Boric acid also failed, which is not to be wondered at when one has seen the varieties of growths which occur in boric lotion in the tropics. Permanganate of potash solutions are of no use except in the stage of convalescence and the same may be said of carbolic oil. Tincture of iodine is no doubt exceedingly severe, but it succeeded in checking the inflammation in some of the later patches. If a routine treatment is at all worthy of consideration in any disease I should suggest syringing with 1 in 500 solution of perchloride of mercury heated by the addition of hot water, probably representing about 1 in 1000, alternating, if considered advisable, with 1 in 40 carbolic, warmed, painting at the back of the ear and over the mastoid with tincture of iodine and drying out the ear carefully and dropping in warm carbolic oil with extract of belladonna in quantity proportionate to the amount of pain three or four times daily. If the pain be intense linseed poultices smeared over with extract of belladonna and extract of opium are the best means of relief, relieved every half hour if necessary, and not applied too hot so as to scald the ear and thus practically to put an end to the treatment on account of the soreness which a scalding poultice causes. If convalescence be interrupted by the occurrence of points of inflammation within reach tincture of iodine may be applied if the patient can make up his mind to bear pain for a few minutes, otherwise poultices must be continued until all symptoms have ceased.

I have adopted the above name as expressing most clearly and concisely the features and climatic limitation of the affection.

Klu Selangor, Federated Malay States.

NEURECTOMY A PREVENTIVE OF MASTURBATION.

WITH REPORT ON THE OPERATION.

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THE practice of masturbation has come to be regarded as an incurable evil and the discussion of so unsavoury a subject is therefore tabooed. Still, the habit is prevalent with a certain class of neurotics, and medical men when they are brought face to face with such cases feel helplessly at sea. In nineteen cases out of twenty moral suasion is utterly useless. Mechanical means—some of them rather ingenious—have been tried, but the fury of the patient has torn to pieces all such restraints. In fact, these cases have hitherto seemed hopeless. It has long been an unavailing regret that, because of our impotence to deal with this habit, many patients are sacrificed to it mind and body and their characters ruined by it; and more than two years ago it struck me (Dr. A. Campbell Clark) that only one means of cure was possible—viz., a means which would not exercise mechanical restraint but would prevent sensation and therefore gratification. It occurred to me, when thinking out the nervous mechanism of the act, that by division of the afferent nerve of the reflex circuit not only would erection be impossible but sensation would be prevented. Erection by mental suggestion or prostatic irritation can be excluded as beside the question. I therefore mentioned my views to Mr. Henry E. Clark, an experienced anatomist and surgeon, and having obtained the necessary consent he agreed to perform the operation on a middle-aged man who had been insane only about three years and had not shown any sign of early neuro-mental degeneracy. The operation was successful, but the man was very much depressed for some time after. He has quite given up masturbation and has for over a year been very much improved mentally. Whether the nerve is now intact I am unable to say, but if so it does not yet perform its functions, for the patient says that the only distinct sensation he has occurs when he is micturating. He admits that he is not so energetic as he was before the operation. His age is now 49 years. It may be contended that this operation is not desirable in the majority of cases. That is a question for the family medical adviser and the friends of the patient, but undoubtedly, if the operation is of any value, it must be in early cases before the habit has become a second nature and before nervous degeneration is too far advanced. The experience of this case has taught us that for a man in middle life less than half an inch should be resected as so far distinct sensation has not returned. One thing, however, is certain—that the mental result in this case justified the operation. The man is no longer the degraded creature he was. So far there is no atrophy of the testicles.

Report by Mr. Henry E. Clark.—The details of the operation were simple. Success depends much on the care with which antisepsis is carried out, and I therefore had the pubes, the root of the penis, and the scrotum closely shaved, and the parts were then well washed with soap and water and cleaned with turpentine and spirits of wine. Thereafter a dressing of lint steeped in carbolic solution (1 per cent.) was applied and was kept on for four hours before the operation. The incision was transverse and was placed across the dorsal surface about half an inch from the root of the penis. The skin here being elastic and flaccid it can be drawn into a longitudinal fold and this is easily transfixed transversely by a sharp narrow-bladed knife without injury to the dorsal vein. The nerves, two in number, are not easy to identify or isolate, being intimately wrapped up in the loose superficial fascia. They must be sought for on the lateral margins of the dorsum of the penis and they are in close relation to the dorsal arteries, generally to the outer side of these. Fortunately, the arteries are more closely attached to the capsule of the corpus cavernosum and they are not, therefore, liable to be injured. The nerves were raised by means of a blunt hook and about half an inch of each nerve was resected. The wound was closed by a continuous catgut suture, and being made thoroughly dry by washing with ether a layer of thin gauze was made to cover it by means of collodion. The healing process took ten days and the patient made a satisfactory recovery.

Glasgow.

NOTES, CLINICAL AND PATHOLOGICAL, OF A CASE OF GENERAL PARALYSIS OF THE INSANE OCCURRING IN EARLY LIFE.

BY HAMILTON MARR, M.D. GLASG.,
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FACTORS commonly found in general paralysis of the insane occurring in early life are a family history of nervous disorder and syphilis either congenital or acquired. The presence of syphilis occurs so often that the causation of the disease has been ascribed to it. In the case about to be recorded evidence of syphilitic taint was carefully sought but with negative results. The history of the antecedents of the case afforded ample scope for the introduction of a

syphilitic element, though clinical data on this point were wanting. The paternal grandmother of the patient died in Dublin District Asylum and Mr. Conolly Norman kindly gave the information that when the grandmother was admitted to the Richmond Asylum she was 42 years of age, had been deserted by her husband, and was suffering from suicidal melancholia. The cause of her death was registered as consumption. The patient's mother, after many years of loose living and intemperance, also died in an asylum. For three years before her death she had epileptic and paralytic seizures. The history obtained from an aunt of the patient is, unfortunately, lessened in value by the fact that she was not sure in which asylum the mother died. If the statement as above noted is true it is quite probable that the mother was a general paralytic and that the case under consideration was one of homologous heredity. The other noteworthy features of the case are the occurrence of the disease in a female at the onset of puberty and the diagnosis of general paralysis on purely physical grounds—the mental state of the patient was complete dementia. Dr. Ford Robertson of the Laboratory of the Conjoint Scottish Asylums reported on the microscopical appearances of the brain tissues.

A female, aged 14 years, was admitted to Woodilee Asylum on Nov. 12th, 1897, labouring under mental disease said to have been of four years' duration. The mother and paternal grandmother of the patient had died in asylums; all the other relatives of the patient were reported to have been healthy. The patient was a healthy child until she was six years old; she then became restless and very destructive in her habits, tearing off her clothes and putting them into the fire. She also wandered about the streets and gradually became so mindless that when she was 10 years old she was sent to Larbert Imbecile Institution. At 12 years of age she was unable to recognise her friends, was very dirty in her habits, and quite unfit to do anything for herself. On admission to Woodilee Asylum the patient was hardly able to walk; her gait was spastic. The deep and superficial reflexes were equal and exaggerated. There was apparently no change in general sensation. The pupils were dilated and unequal, the right being larger than the left; both pupils responded in accommodation but very sluggishly to light. Fibrillar tremor of the face was present. The state of her tongue could not be ascertained. The movements of the hands and feet were at times irregular and tumultuous. The abdomen was somewhat retracted. Beyond the short, sharp, so-called hydrocephalic cry the patient uttered no sound. She gave no signs of any intelligence and was very dirty in her habits. The face was pallid and anæmic. A mass of swollen glands, hard and isolated, was present in the axilla. The other organs of the body were apparently normal. The urine was pale, of low specific gravity, but presented no other feature of importance. The temperature was subnormal and continued so until a few days before death, when it was febrile. The subsequent history of the case may be shortly narrated. The patient took to bed on account of difficulty in walking; the muscles of the lower limbs were in a state of clonic spasm, but ultimately this condition passed into tonic spasm, so that the thigh was retracted on the abdomen and the legs were flexed on the thigh. The choreic movements increased in extent and in amount but affected chiefly the upper limbs and face. The deep reflexes disappeared, but the exaggerated superficial reflexes remained. The patient became more and more emaciated and she died on June 27th, 1898.

The post-mortem examination was performed 30 hours after death. Permission to examine the head only was given. The head was 19 inches in circumference, narrow in front but very wide in the middle parietal region. The sutures of the calvarium were well marked. The skull-cap was light and porous, the diploë was increased. The frontal bone was three-eighths of an inch, and the occipital a quarter of an inch, in thickness. The dura mater was thickened. In the subdural space false membranes consisting of fibrin covered the whole of the upper surfaces of the hemispheres. This fibrinous deposit was in its thickest parts a quarter of an inch in thickness; it tapered to one-eighth of an inch at the circumference of the brain. The pia mater was thickened and showed milky patches, especially in the region of the cerebral veins. A gelatinous deposit filled the sulci. Clear serous fluid was present in some quantity in the spaces of the meninges and ventricular cavities. The convolutions were fairly well marked. The brain weighed 24 ounces. Microscopical examination showed marked thickening of the pia mater and infiltration of leucocytes. There was marked sub-pial felting. The blood-vessels showed hyaline change, marked periarteritis, and extravasation of blood corpuscles. The neuroglial cells were proliferating and the neuroglial fibres, increased in density and number, caused extensive fibrosis. The nerve cells were much disintegrated.

Lenzie.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

GUY'S HOSPITAL.

A CASE OF RUPTURED AORTIC ANEURYSM AND GUMMA OF THE HEART AT 26 YEARS OF AGE.

(Under the care of Dr. L. E. SHAW.)

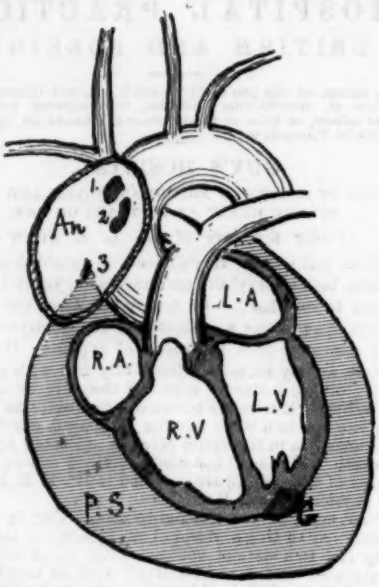
IT is in many cases very difficult to establish any causal connexion between syphilis and aneurysm, yet in the following case it can hardly be questioned that the extensive atheroma in so young a patient and the aneurysm to which it gave rise were both the result of syphilis. Gummata of the heart are by no means frequently met with and in the majority of the instances recorded they are situated in or near the apex; it is rarely possible to diagnose the condition during life and in a large number of the cases sudden death has occurred, as in the series of cases collected by Sir Dyce Duckworth[1]; Loomis[2] has also described some cases. For the notes of the case we are indebted to Dr. F. E. Fremantle, house physician, Guy's Hospital.

A man, aged 26 years, a lighterman, living in Shadwell, was admitted to Guy's Hospital at 11 A.M. on the morning of May 17th in a state of collapse. His mates who brought him up stated that he had started work as usual at 8 A.M. apparently in perfect health and spirits with the exception of a slight cold which he had had for three weeks. He was a singularly steady man and had always been in good health. The work was fairly heavy, that of carrying frozen carcasses ashore, but he had worked away as usual till 10.30 A.M. when he was noticed to sit down, apparently in a faint. His head was held between his knees for half a minute or more and he revived; but soon after he fell on to the deck again unconscious. He was taken to Guy's Hospital at 11 and seemed to be conscious, but he was blanched and considerably collapsed. He kept crying out about the pain in his abdomen and asked not to be touched. The abdomen at first was rigid but afterwards slackened, and he was rolling about in great pain which was localised to the lower part of the left chest. There were, however, no corresponding physical signs. The pulse was barely perceptible, it was very rapid (140 beats to the minute) and irregular. The heart could not be heard. The chest seemed to be resonant and the air entry everywhere was good. The pupils were equal and only moderately dilated and a small motion was passed under him. A syringeful (20 minims) of brandy was injected hypodermically and the patient was at once taken into the ward under the care of Dr. L. E. Shaw. He was then only taking gasps of breath; artificial respiration was therefore performed and oxygen was administered. Brandy was again injected, but the patient died within 10 minutes after admission to the ward and less than an hour from the time he was first taken ill. On further examination after death the cardiac area was found to be increased by about one finger's breadth in every direction beyond normal, although the chest indicated considerable emphysema. There were no signs of previous illness and no scars on the legs or on the penis. It was stated by his family that he had never had a day's illness and no definite syphilitic history could be made out. The deceased left three healthy children. He was fond of rowing and was out only three days before his death training for a race.

Necropsy.—At the post-mortem examination the pericardium was found to be tightly distended and full of blood

[1] Transactions of the Clinical Society of London, vol xxix., p. 7.
[2] American Journal of the Medical Sciences, October, 1895.

and at the top of the pericardial sac there was a narrow slit, about one-sixth of an inch in length, opening into a saccular aneurysm. The aneurysm was of about the same size as a hen's egg, projecting forwards and to the right from the first part of the aorta over the top of the right auricle and pressing slightly on the right bronchus. The innominate artery opened out of it at its base. When opened up its walls were found to be thin and smooth and to contain only recent blood-clot. The communication with the aorta was by an aperture three-quarters of an inch in diameter two inches above the aortic valve. The aorta was dotted



R.A., Right auricle. R.V., Right ventricle. L.A., Left auricle. L.V., Left ventricle, showing (G.) gumma in the wall. P.S., Pericardial sac. An, Aneurysm, showing openings into (1) the innominate artery, (2) the aorta, and (3) the pericardial sac.

with patches of yellow atheroma in an early stage. The valves were healthy; the myocardium and visceral pericardium in general were healthy with a fair deposit of fat. In front of the apex of the left ventricle, however, for an area of about the size of a sixpenny-piece, the pericardium presented a nodular, yellowish grey, gelatinous surface, underneath which on section the myocardium was found to be replaced by a soft, yellowish grey, gelatinous tissue, with here and there softer, yellowish nodules which appeared about to break down. This was situated at the base of one of the papillary muscles and on microscopic examination proved to be a gumma. There was no local dilatation of the ventricular wall. An early gumma was found in the pancreas, about half an inch in diameter, otherwise the necropsy was negative.

Remarks by Dr. FREMANTLE.—The case is instructive in demonstrating (1) such a rarity as gumma of the heart; (2) the absence of other syphilitic lesions, with the exception of one other visceral gumma and the aortic atheroma; (3) the combination of syphilis and strain in the production of an aneurysm; and (4) the occurrence of sudden death from rupture of an aneurysm in a young man, aged 26 years, to all appearance in perfectly good health. I am indebted to Dr. J. H. Bryant, demonstrator in the post-mortem room, and to Dr. L. E. Shaw, the physician in charge of the case, for permission to publish the notes of the case.

LEEDS GENERAL INFIRMARY.

A CASE OF INJURY TO THE SPINAL CORD.

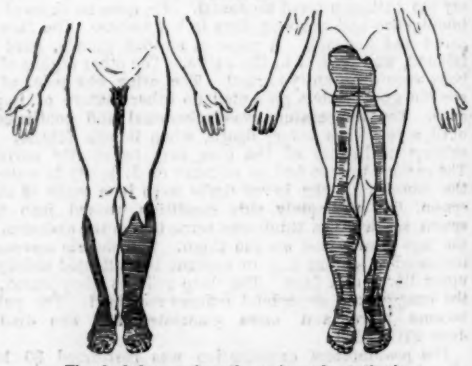
(Under the care of Mr. B. G. A. MOYNIHAN.)

FOR the notes of the case we are indebted to Dr. Broadley, house surgeon.

A man, aged 26 years, was admitted into the Leeds General Infirmary on July 18th, 1890. He had been working in a stooping position in a mine when a mass of stone fell on to the small of his back. When admitted into the infirmary he was conscious but he was unable to walk, the left leg was partially paralysed, and the right completely so. Sensation in both legs was increased. There was a large bruise over the lumbar spines and he had retention of urine and incontinence of fæces. Cystitis developed as a result of catheterisation, but was satisfactorily dealt with by frequent flushing with quinine lotion. On Sept. 4th a note was made to the effect that he could "move his legs without pain" and on Oct. 6th was the following note: "The patient tried to raise himself in bed yesterday evening with the pulley. He had a sudden pain in the left leg which commenced twitching violently; the twitching spread rapidly to the other leg, the trunk, the neck, and the arms. The nurse found him very rigid, with his hands tightly clenched, his head drawn back, his pupils widely dilated, and he was breathing with difficulty. He was quite conscious and complained of intense pain in the back and legs. The 'attack' lasted an hour and he was left with intense 'pins and needles' in both feet and legs." On Nov. 4th it was noted that there was a "marked depression" between the third and fourth lumbar spines. "He has motor paralysis in both legs and feet, the muscles supplied by the two popliteal nerves and their branches being quite uninfluenced by central impulses. The feet point downwards, are inverted, and the skin covering them has a peculiar smooth appearance. The ankles can only be partially flexed, the left more than the right. He can flex the right thigh completely, but the left only to an angle of 30°. Ankle clonus and plantar reflex are absent. The patellar reflex is absent on the left side and present (though lessened) on the right side. Cremasteric reflex is present on both sides. The urine dribbles always, but more so on coughing or straining. He can retain his motions except when loose. There is no priapism. Thermal sensibility is present over the whole anæsthetic area when the difference of temperature is considerable." The anæsthetic area after Oct. 6th was practically the same as at the present time.

The patient was readmitted into the infirmary on June 26th, 1899, under the care of Mr. W. H. Brown, who gave Mr. Moynihan charge of the case. For two years the man had suffered from trophic ulceration of the feet, which was deep and extensive and implicated the bones. The anæsthetic area is accurately shown in Fig. 1. The

FIG. 1.



The shaded areas show the regions of anæsthesia.

"saddle-shaped area" of Thorburn was quite anæsthetic, but this cannot be shown in a diagram. The skin was insensitive to heat and cold over the whole anæsthetic area and for about one inch above it in every part. Ankle clonus and plantar reflex were absent on both sides. Patellar reflex was absent on the left side; on the right side it was just barely perceptible. Cremasteric and abdominal reflexes were present. The sensibility of the rectum was impaired. The patient could just tell when the bowels needed to be opened and defecation required extreme exertion. The sensibility of the bladder also was impaired; the patient had control over his bladder until about half a pint of urine had collected, then a dribble set in and extra exertion was required to produce a feeble stream. Testicular sensation was present and apparently normal. There was a very faint faradaic reaction in the calf and anterior tibial muscles of the right side. The reaction of degeneration was complete

in the muscles below the knees. The case resembled very closely Kocher's case No. 70, recorded on p. 633 of his work, "Die Verletzungen der Wirbelsäule."

Remarks by MR. MOYNIHAN.—In attempting to unravel and elucidate the problems of central nerve lesions and their peripheral expression we are met at the outset by certain irregularities, certain individual variations which are almost bewildering. A good deal of mental trouble will be saved to the student if he remembers the anatomy of the sacral and lumbar plexuses. Unfortunately, these are, anatomically speaking, too often considered as separate plexuses, when, as a matter of fact, they are one and indivisible. The key to the arrangement of the lumbo-sacral plexus is the "two-pronged" nerve (the "nervus furcalis" of von Jhering), normally the fourth lumbar. In some cases this nerve enters largely into the lumbar plexus, in other examples almost the whole of it goes to join the sacral plexus. The proportion of it that joins the sacral plexus has been shown by Eisler to vary from one-twentieth to eighteen-twentieths. It is obvious therefore that the distal expressions of a central lesion occupying an identical position in two cases may vary within very considerable limits. The case recorded here is especially interesting in the fact that the results of the lesions are not symmetrical. On the left side the anterior tibial muscle, the peronei and the calf muscles have wholly lost their function, whereas on the right side the wasting is much less marked and there is a certain, though almost insignificant, amount of reaction in the gluteus maximus and the anterior tibial and peronei muscles. The difference in the two sides is very well shown in Fig. 2. On the left side

FIG. 2.

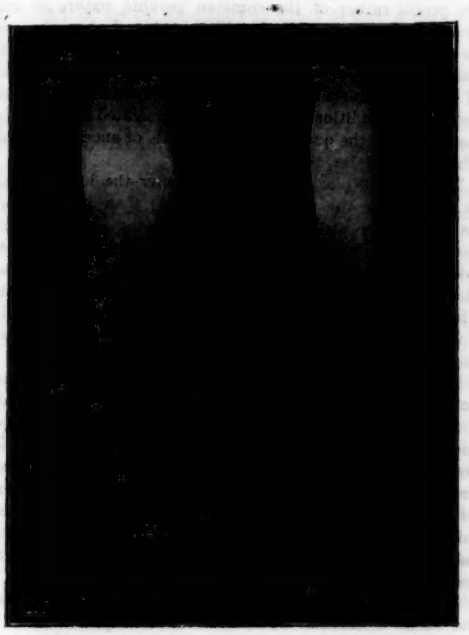


Illustration of legs showing amount of wasting and paralytic club foot.

the area of anæsthesia extends decidedly higher than on the right side, reaching almost to the level of the knee-joint (vide Fig. 1). The most feasible explanation, I think, is this: the second, the third, and the fourth sacral nerves are destroyed on both sides and I believe the first sacral nerve is also. I think that the fifth lumbar on the right side is free and it seems not improbable that the area assigned by Kocher to the first sacral (including the kidney-shaped area in the sole) may be supplied by the fifth lumbar. (Kocher gives no peripheral cutaneous area to the fifth lumbar.) On the left side the fifth lumbar and a portion of the fourth lumbar are destroyed. This would account for the higher level of anæsthesia and for the muscular palsy. Paterson has shown that for his cases at any rate the following innervation held good: gastrocnemius, 5 L., 1 and 2 S.; soleus, 5 L., 1 and 2 S.; anterior tibial group, 4 and 5 L., 1 S.; peronei (longus et brevis), 4 and 5 L., 1 S. If, as I assume, the fourth lumbar partly and the fifth lumbar wholly are destroyed on the left side, the exact muscular wasting is produced which can be explained by Paterson's investigations. Kocher gives the muscular innervation as follows: gastrocnemius and soleus, 2 and 3 S.; anterior tibial and peronei, 1 S. If, therefore, we assume that the cutaneous areas of Kocher are correct, his muscular allotment of nerve-supply must be wrong, and *vice versâ*. Both cannot be right. However, one cannot argue from an isolated case. The conditions in this case are extremely interesting and afford an enticing subject for discussion.

Reviews and Notices of Books.

Anæmia and Some of the Diseases of the Blood-forming Organs and Ductless Glands. By BYROM BRAMWELL, M.D., F.R.C.P., F.R.S. Edin., Physician to the Royal Infirmary, Edinburgh, &c. Edinburgh: Oliver and Boyd. 1899. Pp. 443. Price 12*s.* 6*d.*

OUR clinical knowledge of diseases of the blood and diseases of the blood-forming organs and ductless glands is comparatively recent, and although some excellent monographs on these conditions have appeared they have been mainly based on physiological and pathological conditions. The present volume, then, based on the author's "own clinical and pathological experience," is especially welcome, and those readers who have studied previous works of the author will expect to find in this volume a large amount of information particularly useful in actual practice and in this hope they will be by no means disappointed. It is written in a style that at once rivets attention, and, marked heed being paid to diagnosis, prognosis, and treatment, it will prove a most valuable work for reference.

The first section of the book is concerned with Anæmia. After a brief discussion on the basis of a classification of anæmia the more important causes of this condition are considered. The etiology naturally covers a large field, but Dr. Bramwell makes a convenient summary by arranging the causes in three groups. 1. Those cases (*a*) in which the anæmia is due to conditions which interfere with the elaboration of the materials which are essential to maintain the blood in a condition of health; and (*b*) those cases in which the anæmia is due to defective blood-formation. Group 2 includes those cases in which the anæmia is due (*a*) to direct loss of blood, or to a prolonged drain of the albuminous materials of the blood from the system; and (*b*) to excessive blood-destruction. Group 3 includes those cases in which the anæmia is due both to excessive blood-destruction and to defective blood-formation acting in combination. This classification is a good and sound one and considerably aids in a proper understanding of the condition. The clinical symptoms associated with anæmia and the condition of the blood are then described, and the author proceeds to give an able description of chlorosis. The essential cause would appear to be a deficiency of hæmoglobin in the blood—a deficiency which is produced in some way or another by the strain which is put upon the tissues and blood-forming organs of the female by the rapid development which takes place at or about the time of puberty. Although Dr. Bramwell admits that derangements of the gastro-intestinal tract may have some influence in the production of chlorosis, yet he considers—and we believe rightly so—that constipation only acts as a contributory cause in some cases, and not as the essential and fundamental one. The clinical history is well given, although we are surprised to observe that spurious hæmoptysis, or rather staining of

the saliva with blood, is not mentioned as a frequent occurrence in chlorosis, naturally giving rise to considerable alarm on the part of the patient and her friends. In speaking of the treatment of chlorosis great emphasis is laid on the importance of complete rest in bed.

The next section (for the book is not divided into "chapters") is on Pernicious Anæmia and a very good description is given of the symptoms and the characters of the blood. The diagnosis of this condition is frequently attended with considerable difficulty and the practitioner will receive great help in this matter from a perusal of Dr. Bramwell's remarks. Stress is of course laid on the examination of the blood, but separate paragraphs are given on the differential diagnosis of pernicious anæmia and chlorosis, primary heart disease, cancer of the stomach, Bright's disease, medullary disease, and leucocythæmia respectively. Arsenic is considered to be the only remedy with which we are at present acquainted which is likely to produce benefit in any considerable proportion of cases of pernicious anæmia, and unfortunately the good effects of this drug are in the vast majority of cases only temporary.

Leucocythæmia is next considered and the author states that so far as our present knowledge enables us to judge the spleno-medullary and lymphatic forms of leucocythæmia appear to be distinct conditions or varieties, but other varieties (a purely medullary form, for example) may perhaps occur. Most observers will agree with Dr. Bramwell in this statement, which is based on extensive investigations on the variety of white corpuscles which are present in the blood. The differential diagnosis between the various forms is carefully given. The administration of arsenic and the inhalation of oxygen are the methods of treatment which hold out the greatest hopes of success.

Dr. Bramwell's account of "Hodgkin's Disease" is again essentially a practical one. He draws attention to the difficulty of differentiating during life the glandular enlargements due to Hodgkin's disease from that due to tubercle and he lays stress on the importance of ascertaining whether the spleen is enlarged and of seeking for evidence of the presence of lymphoid deposits in the other organs and tissues. He believes that the frequency with which enlarged glands which during life present all the appearances characteristic of Hodgkin's disease are found after death to be tuberculous has been much under-estimated. This is an important point and is worthy of further investigation.

Too much praise cannot be given to the clinical description of Addison's Disease. A most clear and accurate idea of the symptom of this condition is conveyed to the reader. Dr. Bramwell possesses the gift of sketching in words a vivid picture of a disease which strongly impresses itself on the mind of the student, thus making his writings particularly valuable. A full account is next given of Myxœdema, due attention being naturally given to the thyroid treatment which is regarded by the author as a true specific for the cure of the disease. Sections on Exophthalmic Goitre and Acromegaly conclude one of the most instructive volumes which we have had the pleasure of reading and we can strongly recommend it to the notice of our readers.

Man, Past and Present. By A. H. KEANE, F.R.G.S., Emeritus Professor of Hindustani, University College, London. Cambridge Geographical Series. Price 12*s*.

THE volume before us is a substantial contribution to the study of ethnology, dealing in a concise and lucid manner with the present knowledge of the early condition of the human family as a whole, the dispersals of man which occurred at various periods, and the effects of varied environments upon his constitution and evolution. This work will be of interest to the physician who endeavours to trace out the history of man as it bears on the clinical study of individuals, in the various modes of reversion and decadence not uncommonly observed accompanying mental defectiveness; while any light thrown upon the principles involved in the evolution of man, under the consequences of inter-breeding and the effects of the environment is likely to afford further explanation of conditions which may appear at first sight to be wholly pathological or non-understandable.

Dealing briefly with the population of the world by migration of the Pleistocene man from one centre, which, it is argued, must have been the Indo-Malaysian inter-tropical lands, the author traces out four primary human groups, evolved each in its special habitat—viz., Ethiopic, Mongolic, American, and Caucasic. Community of origin is evidenced in the uniform character of early man and his works. Years ago Virchow declared that there was no distinguishing between the forms of palæolithic implements found in the Eastern and Western Hemispheres; this is shown by examination of the collections in Argentina, the United States, and Europe. Much study has been bestowed upon the coincidences of mythologies, folk-lore tales, and popular superstitions, such as the prevalent belief in the were-wolf, and other strange but common modes of thought which may now be followed round the globe from Europe through Malaysia to Africa and the New World; facts thus clearly brought under review seem to indicate that where contact and outward influences are excluded by time and space such parallelisms are proofs rather of the common psychic nature of man, everywhere acted upon by like causes during the early struggle for existence. Data brought together by the author lend strong support to the view that all these manifestations of dawning reasoning faculty have their root in primitive economic conditions. They are associated in the first instance with the question, not of spirit- or ancestor-worship, which comes later, but of food supply.

This volume places before the reader the human family as a whole in the prehistoric periods; then its origin and its evolution are traced out, showing at the same time its antiquity and specific unity, together with the establishment of primary divisions of mankind and their dispersal over the globe. The author proceeds to show that while the separation of men led to independent specialisation in their several geographical zones the inter-relations of the chief sub-groups produced fresh results in evolution.

The whole book and every page show erudition, extensive knowledge, and careful research presented in a form available to the student and for reference. In later chapters a very clear conspectus is given of each of the four primary ethnical groups described under headings as to Primeval Home, Present Range, Physical and Mental Characters and Religion, with the main subdivisions of each group. Much useful information is supplied as to the language, manual work, culture, and habits of each group, together with some account of the development and history of nationalities.

12 plates include 45 excellent photographs of the types of the races described. The book is well printed and the marginal notes greatly add to easy reference, while the index increases its value.

LIBRARY TABLE.

Essays and Nature Studies with Lectures. By W. J. C. MILLER, B.A. Lond., late Registrar of the General Medical Council and Mathematical Editor of *The Educational Times*. Edited with an Introduction by H. KIRKE SWANN. London: Elliot Stock, John Bale, Sons, and Danielsson, Limited. Price 10*s*. 6*d*. net.—On several occasions attention has been drawn in THE LANCET to the charming nature essays which Mr. W. J. C. Miller, the late Registrar to the General Medical Council, contributed from time to time to *Nature Notes* and these are now collected, together with

other essays of a literary character, into book form. The motto on the title page—

> "Nature never did betray
> The heart that loved her; 'tis her privilege,
> Through all the years of this our life, to lead
> From joy to joy"—

sufficiently indicates the spirit in which the essays are written and even a desultory reader will obtain both pleasure and profit from their perusal, while as an introduction to the study of Nature the book is an admirable one. One of the main objects of the volume, however, is to present to the many friends of Mr. Miller an enduring memorial of his more active days and only 200 copies of the book have been issued. "Nature Pleasures in a Riverside Garden" has a special interest inasmuch as it describes the home in which Mr. Miller lived up to the time when ill health obliged him to abandon it for the south of England. In it he describes the plant and bird life of his small garden and we seem to hear the very notes of the song-birds among the shrubs and trees. All who love gardens will agree with the author when he says, "Of all plants the growth of perennials interests us perhaps most," for do we not see our old friends year by year and watch both their coming and their departure with pleasure and gratitude? "A Bird-loved Suburb of London" is another delightful description of the bird life of Richmond, but it is hardly fair to pick out individual essays when all are so sympathetically written. Among the literary essays it is, however, right to call attention to a sketch of the poetry of Byron, especially as there is now a tendency to taboo that champion of the land

> "Where burning Sappho loved and sung,
> Where grew the arts of war and peace,
> Where Delos rose and Phœbus sprung."

Opinions may perhaps differ about his character, but no one will deny the beauty of some of his poetry. The other literary and critical essays include "The Literary Charm of Scenic Associations," "Henrik Ibsen: a Dramatic Pioneer," "The Rise, Development, and Progress of the English Drama," "Ingoldsby," and "James Thomson, the Bard of Richmond." A good illustration of the author's reverence for Nature is to be found in "A Devonian Headland," which describes the scenery around the place in which Mr. Miller was born. The volume is tastefully bound, well printed on good paper, and contains a portrait of Mr. Miller.

An Epitome of the History of Medicine. By ROSWELL PARK, A.M., M.D., Professor of Surgery in the Medical Department of the University of Buffalo, &c. Based upon a course of lectures delivered in the University of Buffalo. Second edition. Illustrated with portraits and other engravings. Pages xiv.-370. Philadelphia: The F. A. Davis Co. Extra cloth, $2.00 net.—The subject with which this book deals is an entertaining as well as a useful one and it is interesting to know that a second edition of this "Epitome of the History of Medicine" has been called for within a year of its first appearance. As the author says, the history of medicine is really a history of human error and of human discovery. The origin of medicine must have been nearly contemporaneous with the origin of civilisation and a writer has little opportunity of doing such a subject full justice in a book of 370 pages. Nevertheless, the volume is a useful one for those who have little leisure and opportunity for studying the history of medicine in detached biographies and monographs. The book under notice is divided into 15 chapters, the first of which deals with medicine among the Hebrews, Egyptians, Chinese, Greeks, and oriental countries generally. Through the ages of transition and renovation medicine is traced to the present time and there are special chapters on the history of medicine in America and the history of anæsthesia and of antisepsis. An epitome of the history of dentistry is also added and the work concludes with a chapter on iatrotheurgic symbolism, a term which the author has coined to signify medico-Christian symbolism.

Amateur Gardening. Vol. XV. Illustrated with Coloured Plates and Engravings. London: 148 and 149, Aldersgate-street, E.C.—This periodical is a most useful work for amateur gardeners and the present volume is quite a storehouse of practical information. A note on p. 101 contains an important question on Bulb Culture, signed "Lawson Tait."

Hospital Expenditure: The Commissariat. Reprinted from the *Hospital*, 1898. London: The Scientific Press, Limited. Crown 8vo. Price 2*s.* 6*d.*—This book, the preface states, is the "outcome of an attempt to find, as it were, a common denominator whereby the countless systems of domestic economy in vogue at large institutions might be measured," and it aims at showing how to seek, and how best to apply for purposes of comparison, a knowledge of the cost of victualling such institutions. It treats the question by the study of four main considerations: (1) the number of persons to be fed, (2) individual requirements, (3) food-supply, and (4) system of management.

Schoolboys' Special Immorality. By MAURICE C. HIME, M.A., LL.D. London: J. & A. Churchill. 12mo. Price 6*d.* net.—This little book is an enlargement of an article which appeared in our columns some two years ago and consists, as its title tells, of plain words upon the addiction of schoolboys to masturbation. The author speaks first of the prevalence of the vice in boys' schools which he takes for granted and for which he considers the ill-placed delicacy or hyper-sensitiveness of many headmasters must be held responsible. He then debates from the practical standpoint of one who has been himself a headmaster the best means of checking and preventing the vice. These he divides into two: (1) scholastic arrangements; and (2) moral persuasion. With regard to the advisability of plain speaking to boys upon the matter we are in accord with Dr. M. C. Hime. Good advice on this delicate matter, he says, and we believe, provided that it be given at once wisely and affectionately by an experienced and discreet schoolmaster, cannot do harm to any boy; and it is the custom of many schoolmasters to warn their charges against the danger as well as the dirtiness of the habit. With regard to Dr. Hime's school rules directed towards minimising the evil, they are well meant and in some schools might answer, but they could not be adopted and would not be necessary in the big English public schools. We recommend this brochure to all our readers. The subject is one that no one likes to think about or to write about, but it is one concerning which the medical man is often asked to give an opinion. He will be able to assist the sufferer and advise his parents with a very vivid sense of doing a helpful and Christian duty if he has read this little book, which does not of course trespass upon medical provinces.

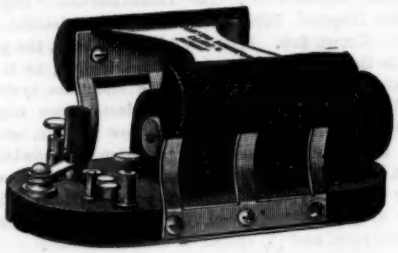
We have received from Messrs. G. W. Bacon and Co., 127, Strand, a large print map of the Transvaal, the Orange Free State, Cape Colony, &c., which at the present moment makes an exceedingly interesting document of reference. The price is 1*s.*, or 2*s.* 6*d.* mounted on cloth.

New Inventions.

THE ELECTRO-NEUROTONE.

THE electro-neurotone is an instrument for applying a gentle coil current to the skin. It fulfils this purpose very well and can be recommended for the numerous cases in which such electrical treatment is indicated. A previous article on the electro-neurotone appeared in our columns on

June 30th, 1894 (p. 1622), since which time the form of the instrument has become more convenient for manipulation and it is claimed that some other improvements have been introduced. Several different patterns are made to suit varying requirements, one of them (Class O) being shown in the illustration a little less than half the actual size. The special feature of them all is that the electrodes which come in contact with the skin are polished metal plates insulated from one another by a strip of ebonite. These plates



are not seen in the engraving as they form the under surface of the base. An ebonite cylinder on the upper surface of the base, as shown, contains an induction coil. A very convenient form of "dry cell" is supplied for the purpose of working the coil, so that the complete apparatus then consists of only two parts joined by a single connecting cord about six feet long. The metal plates are directed to be gently warmed before use without wetting them; there are no sponges, brushes, or leather-covered electrodes. The current can be varied by means of a regulator. In the instrument now submitted to us the two metallic plates for making contact with the skin are each about four and a half inches long and three-quarters of an inch wide. The makers are the Electro-neurotone Company, Limited, 35, Westcroft-square, Ravenscourt-park, London, W.

DANGEROUS TRADES.

THE final report of the Departmental Committee appointed to inquire into and report upon certain miscellaneous dangerous trades is a thorough piece of work, embracing, as it does, the labours of this committee which have extended over fo years. Nor have their inquiries been free from difficulty. Indeed, many of the trades upon which the committee have submitted their report are quite small industries and in some instances they found difficulty in finding sufficient examples upon which to form a judgment as to the course to be pursued. But in the main we venture to say that the report as far as it regards the whole of the technical processes concerned is impartial, having the interests of the employer and employed alike at heart.

There are several points in the report of importance to medical men, especially in regard to the issuing of certificates as to the cause of death of persons employed in operations where insidious danger lurks. In the committee's opinion many deaths are certified as being due to natural causes, which an inquiry into the history of the deceased might readily prove to be traceable to quite a different agency. It has been shown, for example, in official returns that the deaths certified as due to plumbism constitute but a small proportion of the deaths which actually take place from this cause, and while this fact has been established for lead poisoning the committee believe it to be true also of other illnesses set up in the first instance by unhealthy conditions in other trades. The suggestion has been made that all deaths notified to the inspector for the district should be reported by him to the coroner; but the coroner finds that the only person to whom he has recourse is the medical man by whom the certificate of death has been given; and it may very well be, the committee suggests, that no inquiry has been made by him into the antecedents of the deceased. A possible example is quoted. A medical man attends a man in the last stages of Bright's disease and certifies the death as being due to that disease, but an inquiry into the history of the patient would often reveal that the conditions of the man's employment have induced the disorder. The committee have here touched upon a serious and important defect, which amounts to saying that the real number of deaths due actually to industrial disease are not recorded as such. Of course, the Home Secretary will make a note of this which is perhaps the most important observation in the report. Any plan of arriving at the actual cause of death in chronic cases of this sort would naturally be beset with difficulty, but the committee venture to think that if all deaths, among work-people who have been employed at any time within three months immediately preceding death, in a trade in which special rules are established, were to be compulsorily reported to the coroner many facts of great intrinsic and statistical value might be ascertained, and such light might be shed upon some of the occupations which give rise to industrial disease that conditions could be established by which much of the injury and suffering now unhappily endured might be mitigated if not absolutely averted.

After making these very trenchant observations in six prefatory paragraphs the committee proceed to discuss the specific instances of injurious trades. We may point out a few which are typical. The dangers in most instances are to be ascribed to the inhalation of dust, consisting in so many instances of sharp and gritty particles. This is particularly so in the manufacture and use of grindstones. The difficulty here is to deal with a dust which consists of particles of steel as well as stone. A fan is suggested for removing this objectionable cloud, but apparently it would only remove the silicious particles, and the metallic particles from the tool fly with great force. We should like to suggest to the committee, if it be practicable, that a powerful magnet should be kept in the vicinity of the operation. This surely would attract the iron particles. Similar dangers are incurred in basic slag works, in the manufacture and use of emery wheels, and in the production of silicate of cotton. The latter seems to lead to severe irritation of the skin. Precautions are also suggested for preventing injury to the health of those employed in the manufacture of salt and in flour mills. In regard to the use of metallochrome powder in lithographic works the recommendations enjoined are such as should be applied to all industrial processes in which lead is employed. The same apply to the use of lead in print and dye works; but as no cases of illness are recorded, probably on account of the extreme care taken in the process of dyeing with arseniate of soda, the committee do not consider it necessary to recommend the Secretary of State to certify this industry as a dangerous trade. Lastly, the licking of labels with the tongue appears to have become an obsolete method, as the result of the representations of Miss Anderson, Her Majesty's principal lady inspector, in 1895. Where in the few instances the practice remains no illness could be traced to it and Professor Thorpe reports the absence in general of injurious substances in the gum of the label.

The report is a very valuable document on a subject of hygienic and industrial importance. The *fons et origo mali* in the majority of industrial trades is invariably dust in more or less dangerous form. Stone masons are generally a short-lived class of men on this account. The risk lies in the lungs becoming affected; the particles are sharp and when inhaled into the lungs their presence in the case of stony and metallic particles is followed by greater reaction than is the case with either coal- or flour-dust. The result is that, as is pointed out, the lung by degrees becomes so changed in structure that it ceases to be a spongy organ; it becomes converted into a mass of hard fibrous tissue embedded in which are found particles of stone. Once the lung becomes affected the tendency is for the solidification to advance, for the worker to become short-winded and to suffer from severe hæmorrhage. The illness gradually or quickly proceeds to a fatal issue. The members of the committee point out that much has been done to save the coal-miner from inhaling injurious coal-dust by watering and ventilating the pits and they feel that similar preventive measures should be attempted for the millstone builder *et hoc genus omne*. With these conclusions everybody interested in the safety and welfare of the industrial classes concerned will heartily agree.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 23, 1899.

THE proceedings of the British Association for the Advancement of Science which terminated this week at Dover will be held memorable in the annals of science, chiefly on account of the opportunity which the place of meeting offered of exchanging entertainment with the members of the similarly organised French Association assembled at the same time in Boulogne. It was a happy idea to select Dover and Boulogne for the dual purpose, for the English meetings were thus made easily accessible to the French *savants*, and *vice versâ* the French meetings could easily be attended by the English men of science. It was not possible to foreshadow the current of feeling inspired by the pronouncement of the Rennes court-martial which has pervaded certain sections of the English community during the past few weeks, a feeling which even went so far as to suggest that that unfortunate conclusion would seriously interfere with the exchange of courtesies and intellectual entertainment between the men of science of France and of England. But those whose high aim is the pursuit of knowledge were convinced that no influence of this sort could possibly have been allowed to mar the occasion. There is a universality in science; it recognises no differences in creed, race, or nationality; and the recent meetings of the British Association and the French Association at Dover and Boulogne afforded an abundant testimony in favour of the truism. The meeting of the Presidents was impressive. "Immediately the gangway was run out Sir MICHAEL FOSTER (the President of the British Association) sprang up it, and, meeting M. BROUARDEL (the President of the French Association) half way, they kissed each other on both cheeks." Thus were the cordial relations between two organisations of men searching the truth for the truth's sake established.

As to the work of the British Association during the past year it cannot be said that it has been productive of less fruit than on former occasions. But the trend of research has clearly been in the direction of inquiry into the secrets and history of the great vital processes. In a word, the many branches of science would appear to have been directed in general to biology. Last year, as our readers will remember, Sir WILLIAM CROOKES set the scientific world thinking about the possibilities of our food supplies becoming limited on account of the failure of fertilising material, and in his remarkable address he threw out some wonderful suggestions as to how that failure could be obviated. Sir MICHAEL FOSTER, as President this year, chose to review the growth of science in the century and its lessons, and in this choice he was probably prompted by the fact that soon the figures 1800 must drop out of usage. Since practically all real scientific progress has been made in this marvellous century Sir MICHAEL FOSTER undertook no mean task. Yet his address is a model of lucidity of thought, simplicity of expression, and comprehensiveness. He took the elementary yet great facts of the various branches of science which had led men of thought to a generalisation of ideas and to found a solid basis whereon yet to build further, that at last the edifice of truth may gradually yet surely be unfolded to view. Like many of his predecessors Sir MICHAEL FOSTER pleaded for a little pause in the work of inquiry so as to review and marshal the facts which had been brought to light during the century and to calmly consider what the tendency of these facts was in enabling us to pierce the inmost heart of nature. The reward gained on a retrospective survey of this sort is great, for, to quote Sir WILLIAM CROOKES, as "veil after veil is lifted the face of Nature grows more beautiful, august, and wonderful, with every barrier that is withdrawn."

We have said that biology appears to have been a favourite field of investigation and indeed, technical and industrial science had but a small share in the papers of the proceedings. One of the most interesting papers was that read by Dr. HORACE T. BROWN, F.R.S., President of the Chemistry Section, on "The Assimilation of Carbon by the Higher Plants." Dr. BROWN has already thrown considerable light on the chemistry of plant life and on that interesting class of ferments known as enzymes. His recent experiments were made at Kew and they refer to, first, the sources of carbon supply; secondly, to the assimilation of carbon dioxide; and thirdly, to the part played by chlorophyll and radiant energy. His experiments showed how rapidly the leaves of plants absorb the carbonic acid of the atmosphere. A leaf of the sunflower, for example, was shown to absorb 412 cubic centimetres of carbon dioxide per square metre per hour. This amount of carbon dioxide corresponds to the formation of over half a gramme of carbohydrate per square metre per hour. In duplicate experiments the results were remarkably concordant. In the same section Professor DEWAR communicated a paper on solid hydrogen which he has succeeded after many laborious experiments in obtaining. Solid hydrogen is described as a white froth-like mass like frozen foam. The temperature of the solid was found to be 16 degrees absolute under a pressure of 35 millimetres. In appearance solid hydrogen is more like frozen water than frozen mercury, and other evidences remove the last doubt as to the possibility of solid hydrogen having a metallic character; in future hydrogen must be classed among the non-metallic elements. Through this brilliant achievement Professor DEWAR has succeeded in liquifying helion so that not an element remains which has not been reduced from the gaseous to the liquid state, and ere long we have little doubt, so able an experimentalist is Professor DEWAR, that it will be announced that all things have been reduced to the solid condition.

The production of these excessively low temperatures as in the liquefaction of hydrogen has suggested some interesting experiments on the effect of cold on the germinative power of seeds. Sir W. THISELTON DYER placed some ordinary commercial samples of the seeds of barley, vegetable marrow, mustard, and pea in liquid hydrogen for

more than six hours. In spite of this low temperature—453° F. below freezing point—the seeds so treated showed no visible change and, far from being chilled and killed, they came out of the ordeal as fresh and bright as they were before, and every single one germinated after being planted. Some similar experiments were made about a year ago by Dr. HORACE BROWN, who, however, employed liquid air at a temperature which, comparatively speaking, is higher than liquid hydrogen. We pointed out in THE LANCET of Jan. 8th, 1898, p. 116, that Mr. HERBERT SPENCER'S definition of the nature of life implies continuous adjustment of internal to external relations, or, in other words, vitality is preserved by interactions going on between the constituents of the protoplasm, but these temperatures at which the seeds were placed are considerably below that at which ordinary chemical reactions occur, so that Mr. SPENCER'S view of vitality must be materially modified in the face of these very remarkable results. The problem, What is vitality? is still obscure and chemistry so far would appear to throw darkness on the subject instead of light. The interesting phenomenon known as "symbiosis" was discussed by Professor MARSHALL WARD. Certain organisms exist which require the coöperation of other organisms in order to perform their functions and in some instances the organisms pass the whole of their existence together for their mutual advantage, as was the case with the alga and fungus constituting the dual organism of lichens. In other instances one organism appeared to prepare the way for the other, an association which he proposed to name "metabiosis." Again some organisms were detrimental to others and this condition he termed "antibiosis." Sir HENRY ROSCOE presented a paper on the same subject by Dr. A. CALMETTE who drew attention to the conversion of starch into alcohol by means of the symbiotic existence of moulds with yeast. This knowledge has been turned to industrial account, for by the employment of pure cultivation of the two forms of symbiotic organisms thousands of tons of starch were transformed into alcohol in France and Belgium. On the other hand, Professor ARMSTRONG maintained that symbiosis was a purely chemical character, enzymes being concerned in bringing water to a particular condition of activity in re-arranging the elements of complex molecules.

It would be idle to pretend that it is possible to deal at adequate length with the entire series of interesting papers brought before the meeting of the Association. So numerous and busy now are the workers in the scientific field and so rapidly does the whole subject of natural inquiry expand that it is difficult to discuss the results in the aggregate, except in the merest fitful way. Space compels us to omit even passing reference to the important papers read in many other sections, such as those bearing on geology, geography, and engineering, but the very able presidential address to the section of Physiology delivered by Dr. LANGLEY, F.R.S., is published at length in the present issue. Reviewing the work of the Association as a whole it may be said that the past scientific year has brought forth much fruit, and that though still we see, as it were, through a glass darkly yet all must contribute, as Lord SALISBURY has said, towards the penetration of the one great central mystery—the nature of things and of life.

THE authorities of the Sanitary Institute (Margaret-street) have issued an interesting pamphlet on a scheme which has been prepared for the examination in practical hygiene of school teachers. It is pointed out that secondary as well as elementary schools are now beginning to appreciate the advantage of having upon their staff one or more teachers acquainted with the theory and practice of hygiene, more especially in its application to school life; and the desirability of emphasising the necessity of this knowledge in the code for elementary schools is now being pressed upon the Education Department. Hitherto no examination has been established suitable for teachers desirous of showing knowledge in this branch of their work and the Council of the Sanitary Institute, who have for the past 20 years been holding qualifying examinations for official sanitary appointments, have therefore decided to arrange a thorough theoretical and practical examination which will be open to teachers and to those preparing to be teachers. As the comprehensive and systematic study of hygiene in its bearing on school life is almost new ground it has been thought desirable to set out a syllabus in detail in order to show the wide scope that it covers and the co-relation of its several branches to other forms of educational work. On reading over the syllabus we were favourably impressed with the judgment which has been exercised in the selection of the subjects for study; only those had been chosen which would prove useful in every-day life, more especially in reference to schools, and those had been omitted which would entail a more scientific and technical training—that is to say, those matters which would only concern an expert or a medical man. The syllabus is divided into three parts. Part I. is concerned with "personal hygiene, individual and social, including the necessary physiology." This includes instruction in general physiology, foods, clothing, physical exercise, school accidents, and an elementary knowledge of infectious and other complaints; amongst the latter adenoid growths and chorea receive due notice. Part II. deals with "hygiene of schools and private dwellings, such as the planning of houses and schools, the water-supply, drainage and disposal of house refuse, and instruction as regards warming, lighting, and ventilation." Part III. gives useful information in reference to "Hygiene in Education." We may quote one paragraph which indicates the general lines adopted: "Hygiene properly belongs to the training of home; but under the present system of education so much of a child's lifetime is absorbed by school that it is necessary that hygienic training must also be carried on in the school. The needs of teaching hygiene in schools and home will be required only until the hygienic environment is firmly established. In well-educated homes the principles of health will be applied." We are afraid that the last sentence cannot be unreservedly accepted. The manner in which the elementary laws of hygiene are broken in otherwise well-conducted homes is astonishing. In dress, in arrangement of the sleeping rooms (where there is usually a great excess of draperies, thus interfering with

efficient ventilation), and in the regulation of diet and exercise a woeful lack of knowledge of the laws of health is constantly manifested and we take the occasion to urge that practical hygiene should be as much taught in the colleges and schools where children of the upper and middle classes are educated as in the elementary schools.

The Council of the Sanitary Institute are to be congratulated on the syllabus which they have drawn out and the example of the examination paper given shows that the course of instruction will be eminently practical. The examination is of course intended for teachers only, but the nature of the information that they will receive will enable them to teach their pupils facts which will be useful to them through life. The syllabus provides also for study in elementary psychology, in so far as it touches upon education, and many useful hints are given as to the works that should be consulted by candidates in the library of the institute; they are, moreover, allowed the use of the reading-room and the museum of sanitary apparatus and appliances at the institute. There are many other excellent suggestions in the syllabus and we believe that if the intentions of the Council are fully carried out a great improvement in the methods of teaching children will result and the health of school children generally will greatly benefit by the detection and rectification of errors which could not be recognised without the special education which study for the examination will necessitate.

THE Brussels Conference on the Prevention of Syphilis has been held and all who are anxious to see some practical measures adopted to prevent the spread of syphilis and other venereal diseases will be interested in the results. The first question for discussion was as to the effect of what has been generally called the Continental system for the prevention of these diseases. This, as is well known, comprises the regular and frequent medical inspection of all registered prostitutes, with their detention in hospital till cured should they be suffering from venereal disease. The registration of prostitutes and the licensing of brothels form an integral part of this system. On this question there was, as might have been expected, very considerable difference of opinion and as in the end the question was not put, it is impossible to state whether the majority would have voted for or against the system. As to whether the system of inspection might be improved and the system of licensing brothels be continued were matters also discussed, but left wholly unsettled. It was elicited during the discussion that the number of licensed brothels is diminishing rapidly, only to be replaced by unlicensed houses and clandestine prostitutes. This would appear to be the chief difficulty which the authorities in all countries, where attempts are made to control prostitution, have to face, since clandestine prostitution always leads to an increased spread of syphilis.

We may profitably pass on from what was not done to what was done. As was to be expected the question as to how the number of prostitutes might be reduced led to a very animated discussion and the unanimous adoption of a proposition moved by Professor FOURNIER of Paris. This urges upon the Governments to use all their powers for the absolute suppression of juvenile prostitution. On this point we may at least note what has been done in England within the last quarter of a century for the protection of girls of tender age against criminal assaults attempted or committed by men. Up to the year 1875 carnal knowledge of a girl under 10 years of age was a felony and between 10 and 12 years of age a misdemeanour only, if the girl were a consenting party. After the age of 12 years a female was presumed to be capable of taking care of herself. The Act familiarly known as "Mr. CHARLEY'S Act," which was passed in 1875, raised what may be called the "felony age" from 10 to 12 years and the "misdemeanour age" from above 12 to under 13 years. This was a step in the right direction, but it was insufficient and the Criminal Law Amendment Act of 1885 raised the "felony age" to 13 years and the "misdemeanour age" to 16 years. Such, however, is the persistence of vice and the depravity of human nature that, in spite of this law and in spite of police vigilance, girls of 16 years of age and under are to be seen nightly in the streets of large towns and cities; their appearance and manners showing them to be, though young in years, yet hardened in vice. Bearing in mind that the commencement of menstruation does not take place in the large proportion of females till the age of 15 years and, in many cases, not till a later age,[1] there is every reason to try to prevent so far as is possible girls from beginning so hateful a life at least before the age of 18 years. That juvenile prostitution leads to a considerable spread of syphilis is too well known to need discussion. Moreover, those who have had to deal with these females, who have become prostitutes while girls or even children, know how difficult it is to reclaim them. It is noble work to reclaim a fallen woman or a lost girl; surely it is no less noble to save one from falling. And so Professor FOURNIER'S proposition deserves every possible support in this country and elsewhere.

The second proposal, also moved by Professor FOURNIER, was as follows: "That the Conference expresses a wish to see the present meeting used as the starting-point for the foundation of a society of sanitary and moral prophylaxis, whose centre should be in Brussels and which would show its existence (*a*) by the creation of a quarterly paper intended to publish reports and works of interest to the society; (*b*) by meetings of the Congress, the next of which it is proposed shall meet in Brussels in 1902." A provisional committee was appointed, of which Dr. DUBOIS-HAVENITH of Brussels, general secretary of the Conference, was appointed secretary. It is greatly to be hoped that all members of the profession in these kingdoms who are interested in the prevention of syphilis, and who by their experience and professional appointments are in a position to give valuable aid will join this society, forwarding their literary contributions on this very important medical and social subject to Dr. DUBOIS-HAVENITH with an abstract for translation into French, and publication.

The third proposal was moved by Professor FOURNIER and other distinguished *confrères* including Mr. HUTCHINSON of London and was to this effect: "Considering that a profound knowledge of venereal diseases constitutes one

[1] Legal Medicine, Tidy, vol. ii., p. 32. Medical Jurisprudence, Taylor, vol. ii., p. 33.

of the weightiest means of efficiently battling with venereal diseases, the Conference earnestly recommends the different Governments to secure a supply of doctors thoroughly competent in this specialty by instituting in each university complete and compulsory, courses the subjects of which shall form part of the state examinations, the examiners to be specialists." Considering that every member of the profession is brought into contact sooner or later with venereal diseases, and especially syphilis, nothing appears more reasonable than that these diseases should be thoroughly and practically studied at every medical school.

The fourth proposal dealt with orphan children and their guardians who should, it is urged, look specially after their morals. The fifth proposal urged that laws should be applied with special severity against all those creatures who, under the English names of "pimps" and "bullies," live on the wages of prostitution. To call them men would be an abuse of language. But it is a fact, as true as it is sad, that by far the larger number of brothels in England are kept by women. If this is also the case in France we would suggest to Dr. COMMENGE, who proposed, and to Professor FOURNIER who seconded, this motion, that women who keep brothels and live on the wages of infamy are little if any better than "*les souteneurs*." If a woman above the age of 16 years chooses to live a life of prostitution no law can prevent her.. But if the law is to be directed with special severity against the pimps, bullies, and panders, are there any reasons why bawds should be less severely dealt with? Surely the latter can be dispensed with as well as the former.

The next and sixth proposal was moved by Dr. R. SAUNDBY for the British Medical Association: "That all the Governments should appoint in each country a commission charged (1) to determine the frequency of venereal diseases among the civil population, temporary variations being excepted; (2) to inquire as to the institutions already existing for the treatment of venereal diseases, the distribution of hospitals, the number of beds available in the different localities, and to suggest the most effectual means for the treatment of these diseases; and (3) to gather together the different opinions as to the best means of preventing and contracting the propagation of venereal diseases among the civil population and to found on this subject some definite conclusions." Nothing could be more moderate or practical, and it is greatly to be hoped that Lord SALISBURY will be induced to appoint the departmental inquiry asked for some weeks ago into the prevalence and the existing arrangements for the treatment of venereal disease.

The seventh proposal urged the Governments to seize every favourable opportunity of drawing public attention, and above all that of young men, to the dangers which prostitution causes to the health of persons of both sexes and to the disastrous results of venereal diseases. The eighth and last resolution was: "That the Conference expresses the wish to see the statistics of venereal diseases arranged on a uniform base for all countries."

We may, in conclusion, express an earnest hope that an honest and vigorous effort will be made to remove what is a blot upon our civilisation. Mr. ALFRED COOPER in his paper alluded to the state of Piccadilly which is said to be worse than the Haymarket used to be. A state of matters little, if any, less scandalous is to be found nightly in some of the leading thoroughfares in most of our provincial towns and cities. It can serve no good purpose to permit vice to flaunt itself in this shameless manner and to make foreigners blush for our inconsistency. However we may decry the continental system of licensed brothels and registered prostitutes it is nevertheless a fact that such scenes as used to be witnessed in the Haymarket and are to be seen nightly in Piccadilly at the present time would not be permitted in any continental city. So long as human nature remains frail and sinful so long will prostitution and its attendant evils continue; but if the existing laws are vigorously enforced, and if the police are cordially supported by the public, we may live to see a considerable diminution in the number of prostitutes with a proportionate reduction of venereal diseases.

Annotations.

"Ne quid nimis."

THE PERIPHERAL MOTOR NERVES AND THEIR ACTIONS.

IN the interesting address delivered by Dr. Langley to the Physiological Section of the British Association for the Advancement of Science and published in our present issue several debateable points of nerve physiology were discussed and, as the author admitted at the outset, none of the general conclusions which he advanced are generally accepted. It must be acknowledged that familiar as we are with many of the more conspicuous phenomena of life our attempts to furnish an explanation of the intimate nature of nerve action are lamentably defective. We find, for example, that a stimulus applied to one nerve is followed by the contraction of a muscle, but applied to another it is followed by the relaxation of the same muscle, and we call the effect "motor" in the one case and "inhibitory" in the other and fancy we understand the process in each case. But in reality we do not as yet comprehend the nature of nerve action at all. We do not know whether the transmission of an impulse is a wave of molecular or chemical action, or whether it resembles light or electricity in its mode of propagation. That the influence of the nervous system on the body is far-reaching there can be no doubt, but Dr. Langley believes that we are perhaps apt to over-estimate the character and range of that influence. Many and large portions of the organism, he thinks, live their own lives uninfluenced except indirectly by the storms and stresses of the central nervous system. No nervous impulse can pass to them to make them contract or to make them secrete or to quicken or slacken their inherent activity. Nevertheless, even in these cases the nervous system may influence them by changing the quantity or quality of the surrounding fluid. The essential effect of a nerve impulse appears to be to modify the amount of energy set free as work; usually it causes work to be done, as in the contraction of a muscle or in the secretion of fluid by a gland, whilst sometimes it diminishes the work done, as in the cessation of a heart-beat or the decrease of contraction by a blood-vessel. It seems probable that the supply of efferent nerves even to such organs as muscles and glands varies to a very considerable extent and the development of inhibitory fibres Dr. Langley believes to be comparatively small. A second point that was taken into consideration was the nature and powers

of reflex action. Dr. Langley briefly stated the view generally accepted to the effect that the peripheral ganglia receive impulses direct from the periphery and that each ganglion is connected with others, so that many ganglia can be brought into coördinate action, but in opposition to this view it may be remarked that various instances have been observed where the nerve-cells of one ganglion have no connexion with the nerve-cells of another ganglion, so that such a scheme cannot be regarded as of constant occurrence. Instead of this, and as a working hypothesis, Dr. Langley advances the view that the real working mechanism of the peripheral ganglia consists primarily of a cell in the spinal cord which branches, each branch ending in a single cell. Each of these nerve cells sends off a nerve fibre which branches, the branches ending in a group of involuntary muscle or gland cells. A reservation must be made of the plexuses of Meissner and Auerbach in the walls of the intestines, which Dr. Langley regards as of a different nature from the peripheral ganglia generally. He makes the suggestive remark that all the tissues of the body may be looked upon as engaged in a life-long process of carrying out experiments and it is not unlikely that there are in the body what may be spoken of as the residues of these natural physiological experiments, either the beginning of experiments which have failed or the melancholy ends of those which once partially successful have subsequently failed. The last subject taken up by Dr. Langley was the subject of specific nerve energy in the involuntary nervous system, and he gives as his conclusion drawn from observation that the different classes of nerve-fibres and nerve-cells of this part of the nervous system do not possess those deep and inherent differences in their functional activity which are required by the theory of specific nerve energy.

THE PROPOSED NEW LUNG FOR NORTH LONDON (DOLLIS HILL).

ON Sept. 19th an inquiry was held by Colonel A. C. Smith, R.E., at the offices of the Willesden Urban District Council on behalf of the Local Government Board with regard to an application made by the Council for sanction to borrow £50,000 for the purchase of the Dollis Hill estate for the purpose of public walks and pleasure grounds. In support of the application it was stated that memorials from residents in the parish had been received urging the provision of more open spaces, that the rateable value of Willesden in 1879 was about £100,000; in 1889, £271,000; and in 1899, £535,000. Dollis Hill being the only site which could be purchased for a reasonable price—namely, £50,000, or about £520 an acre—the Council decided to purchase this estate. The Middlesex County Council, the London County Council, the Hampstead Vestry, the Hendon District Council, and other subscribers had promised a sum which left only £32,500 to be paid by the Willesden District Council. An additional £10,000 would, however, be required for making roads and fences. The raising of this sum would mean 1*d.* in the pound only on the local rates. In opposition to the scheme it was contended that the total sum was underestimated, while it was not right that a further burden should be laid upon the rates for the purchase of an estate which would be of no real benefit to the ratepayers of Willesden and would be used chiefly by residents of other districts. The Local Government Board with all the facts before them will, we feel sure, report upon the matter fairly, but to us the policy of the opposition appears to be very short-sighted. The population of the North of London is increasing rapidly and where a few years ago there were farms, fields, and country lanes a thickly populated and densely built district now lies. Within the memory of many living parts of the South of London, now admittedly overcrowded, were in the same rural state as was the North of London until a few years ago. The opposers of the plan for securing a lung for the North of London would do well to learn a lesson from the case of the South, where the difficulty of obtaining recreation grounds for its inhabitants has become well-nigh insuperable. In the parish of Willesden within the last three years 3269 houses have been erected and there is little doubt but that the Dollis Hill estate will soon be in the hands of the speculative builder if the application of the District Council be not granted.

THE COUNTESS OF DUFFERIN'S FUND.

THE Central Committee of the National Association for Supplying Medical Aid to the Women of India has just issued a short quinquennial report giving some account of the progress made during the years 1894 to 1898. Throughout the whole of this period the Countess of Elgin and Kincardine presided over the Association and Colonel B. Franklin, I.M.S., acted as honorary secretary to the Central Committee. Lady Curzon of Kedleston has now succeeded the Countess of Elgin as President, and Lieutenant-Colonel E. H. Fenn, R.A.M.C., is the new honorary secretary. The objects of the Association are three-fold—namely, the providing of (1) medical tuition, including the teaching and training in India of women as medical practitioners, hospital assistants, and midwives; (2) medical relief, including the establishment of hospitals, dispensaries, and wards under female superintendence; and (3) trained female nurses and midwives. The training colleges and schools are at Calcutta, Bombay, Madras, Lahore, and Agra; classes have also been formed in a number of other towns. At the end of 1898 there were 35 lady medical practitioners of the first grade, 75 assistant surgeons, and 257 hospital assistants working under the Association, and it is understood that there are about 250 hospitals and dispensaries where female medical aid is available for the women of India, most of them being directly governed by, aided by, or affiliated to, the Association. During 1898 there were 1,484,900 patients treated, classified as 30,500 hospital in-patients, 1,419,100 hospital out-patients, and 35,200 treated free at home.

THE SPREAD OF TUBERCULOSIS BY MILK: A REPORT TO THE HACKNEY VESTRY.

ON Feb. 22nd last the Hackney Vestry adopted the report of its Public Health Committee upon the subject of tuberculosis due to milk, recommending that 100 samples of milk should be obtained in the Hackney District and bacteriologically examined for the presence of tubercle bacilli. The committee, through Dr. J. King Warry, the medical officer of health to the Vestry, have now submitted the report of the directors of the Jenner Institute of Preventive Medicine, to whom the samples were sent. It runs as follows:—

Jenner Institute of Preventive Medicine,
August 3rd, 1899.

SIR,—I beg to submit the following report upon the samples of milk forwarded by you to the Jenner Institute for examination as to the presence of tubercle bacilli.

The samples of milk (100 in number) were received at intervals from March 9th to May 30th, 1899. The fresh samples were examined immediately on their arrival. The milk was centrifugalised for 30 minutes, the cream was then stirred from the top, and the whole centrifugalised for a further period of 30 minutes. In this way the bacteria present in the milk were sedimented. The sedimented portions of the milk were used for examination. A series of microscopical specimens was made from each sample, but such a direct examination does not yield satisfactory results. The only reliable test is by means of inoculation experiments and these were carried out with each sample of the milk. The accompanying table gives the results obtained, both positive and negative.

A period of four to six weeks must elapse before the

diagnosis can experimentally be established and the investigation has consequently extended over some months.

The results may be briefly summarised :—

1. 17 samples of milk were found to contain tubercle bacilli of virulent character.
2. 23 animals succumbed prematurely. It was consequently impossible to establish a diagnosis in these instances.
3. 77 samples were therefore fully and fairly tested.

Taking the 77 absolute tests that were carried out and the 17 positive results that were obtained the proportion of milks from the Hackney District containing tubercle bacilli was found to be 22 per cent.

I am, yours faithfully,

ALLAN MACFADYEN, M.D., Director.

As Dr. J. King Warry pointed out to his vestry, the report reveals a serious condition of the milk-supply of Hackney, no less than 22 per cent. of the samples examined being infected with tubercle bacilli. Regarding the question as one not of local concern only the Public Health Committee recommend that the President of the Board of Agriculture should be memorialised to introduce a Bill into Parliament to give effect to the recommendations of the Royal Commission on Tuberculosis. They also suggest that a circular should be prepared and circulated throughout the district advising the inhabitants to boil all milk before use.

AN EPIDEMIC OF COLITIS AT A COUNTY ASYLUM.

COLITIS has been known to occur sporadically in asylums, but probably the first outbreak of it to any large extent which has been put on record was that which recently occurred at the Derby County Asylum, an account of which is published by Dr. R. J. Legge in the current issue of the *Journal of Mental Science* (July, 1899). Colitis is a disease seldom encountered by general practitioners and an opinion is held by some that the disease occurs almost exclusively in asylums and workhouses. During the year from May, 1898, to May, 1899, 26 male and 27 female patients and one nurse in the asylum were attacked with this disease. Of the 54 persons attacked 23 died. 19 necropsies were held and the following facts were ascertained. In five cases changes in the large intestine only were found, in four cases changes in the small intestine only, and in nine cases changes in both large and small intestines were present. In one case the stomach was ulcerated, in one it contained hæmorrhages into the mucous coats, and finally in one mild case no change could be found in the stomach or intestines. The changes in the large intestine ranged from the well-marked patches of congestion to complete destruction of the mucosa over large areas, the worst examples being usually in the rectum. In the small intestines there were small sharply-cut ulcers, or sometimes injected patches easily seen in the fresh gut. Of the persons attacked with colitis three were apparently quite healthy previously (one was a nurse), eight or nine were epileptics or dements below the normal standard of health, and the remainder were either old or feeble or suffering from organic disease. All the wards, old and new, afforded cases, a preference being shown for the wards inhabited by the feebler patients and irrespectively of sanitary arrangements. At first males and females were attacked impartially, then a series of 19 cases occurred on the female side; finally, of the remaining 23 cases 21 occurred on the male side. The possible sources of infection were water (deep well), milk, pork, and contamination of food with excreta of infected patients, or direct infection from one patient to another. "Attention had been directed to the pork by an epidemic among the asylum pigs of a disease marked by bloody stools and urine and showing post mortem ulcers and hæmorrhages of the intestinal mucosa and hæmorrhages into the kidneys. As the pork (cooked) and the water were found on bacteriological examination to be sterile and as the milk supplied to the patients has (for several months previously) been boiled for 15 minutes these causes were eliminated." All the patients affected with colitis were removed to an isolation block and the clothing, excreta, bedding, &c., were rigidly disinfected, but the epidemic did not appear to be sensibly affected. Among the drugs employed for treatment were izal, calomel, opium, Dover's powder, quinine, iron, chalk and opium powder, castor oil, salol, and ipecacuanha. The last drug was given in doses of 20 or 30 grains of the powder and appeared to modify the hæmorrhage and the diarrhœa. It is doubtful if any benefit was derived from the use of the other drugs, whilst opium was found to do more harm than good. A specimen of ulcerated bowel from a patient was sent to, and examined at, the Jenner Institute of Preventive Medicine and found to contain the bacillus enteritidis sporogenes. This organism had been isolated by Klein in October, 1895, from cases of hæmorrhagic diarrhœa at St. Bartholomew's Hospital, while in the outbreak of the same disease which occurred in March, 1898, at the hospital and affected 144 cases (all of which suffered from severe diarrhœa with blood and mucus in the stools) the rods and spores of the same bacillus were found in abundance in all the stools examined. It may be added that both these epidemics at St. Bartholomew's Hospital were traced to the milk-supply. The bacilli are rods of from one and a half to five micro-millimetres in length, they readily form spores, and pure cultures are readily obtained in milk at a temperature of 37° C. in an atmosphere deprived of oxygen. Three or four minutes' boiling will kill the spores from an artificial culture, but those from the intestinal contents may require six or even ten minutes' boiling to kill them. An important point is that the organism varies greatly in virulence, according to its sporing or non-sporing state, climatic conditions, &c. The pathogenic effects on rodents (rabbits and guinea-pigs) are very marked. After hypodermic injection there result gangrene of the subcutaneous tissues, copious hæmorrhagic exudates, and a free formation of gas in the affected area. At the Derby epidemic stools from eight infected patients were experimented with and in every case typical cultures of the bacillus were obtained. Sections through the ulcerated patches of intestine also showed, in the submucous layer, bacilli resembling the bacillus sporogenes. It appeared from further observations made by Dr. Legge that a virulent form of the bacillus sporogenes was the cause of the disease, and that a non-virulent form of the same bacillus was widely distributed throughout the asylum (being present in the sweepings from the wards). It also appeared probable that the organism was capable of producing the disease in patients who were enfeebled or otherwise predisposed but less so in healthy patients, a supposition which invited further research.

ETHYL BROMIDE AS AN ANÆSTHETIC.

IN the *Maryland Medical Journal* of Sept. 2nd Dr. J. E. Kempter of St. Thomas, Pennsylvania, recommends ethyl bromide as a general anæsthetic in short operations. Its advantage is its rapid action and it is particularly well adapted for children. It is dangerous when used like chloroform—that is, with an admixture of atmospheric air, or when the administration is protracted. Dr. Kempter gives it in the following way which he learned from Dr. Chisholm of Baltimore. A crash towel is folded into the shape of an "air-tight" cone and rendered impervious by a layer of paper, the base of the cone being sufficiently wide to cover both nose and mouth. The amount of ethyl bromide varies from one to two and a half drachms for children and from two to three drachms for adults. The full

dose is poured into the inhaler, which is immediately held down firmly over the patient's nose and mouth and not removed until full anæsthesia is induced and all struggling ceases. The patient sometimes struggles violently and to the uninitiated appears to be in danger of asphyxia, but the cone must not be removed, for in no other way can rapid and safe anæsthesia be obtained by ethyl bromide. Generally speaking, one minute will suffice to induce deep narcosis. The patient awakes suddenly, as if from a natural sleep. Dr. Kempter says that under no circumstances should the inhaler be removed for the purpose of prolonging the anæsthesia. Ethyl bromide was employed as an anæsthetic by Dr. Nunneley of Leeds in 1865; Dr. Levis of Philadelphia made extensive trials of it in 1879 and was one of the chief promoters of its use in America.

THE CASES OF POISONING AT ALDERSHOT.

SOME anxiety was recently aroused at Aldershot owing to numerous cases of poisoning occurring among the troops there. The outbreak was assigned to tinned food, but we learn upon the best authority that the offending food-stuff was cheese, which was found upon examination to be full of tyro-toxicon. There were in all about 40 cases, of which three unhappily ended fatally. The symptoms in all cases were the same—namely, gastro-intestinal irritation with high fever for the first three or four days, muscular and abdominal pains with jaundice lasting for from four to eight days. Considerable prostration resulted in nearly every case and in many cases the pulse showed a tendency to fail. The most remarkable case recorded of wholesale poisoning from the presence of tyro-toxicon in cheese appeared in the report of the Michigan State Board of Health in 1886, when no less than 300 people were seized with an illness manifesting symptoms agreeing with those present in the cases at Aldershot. Tyro-toxicon may occur in long kept milk or in cheese and symptoms of tyro-toxicon poisoning have occurred after the ingestion of ice-cream. Tyro-toxicon appears to be a very definite crystalline substance which is easily separated from organic matters and evidence has even been adduced that the crystalline substance is diazo-benzine.

THE BRITISH OPHTHALMIC HOSPITAL IN JERUSALEM.

THIS hospital belongs to the Grand Priory of the Order of the Hospital of St. John of Jerusalem in England and its eleventh report, which deals with events of the year ending Sept. 30th, 1898, is a gratifying record of philanthropic activity. An ophthalmic hospital is a charity which appeals to popular sympathy in a peculiar degree, for the benefits conferred on sufferers are for the most part unmistakeable, neither is it difficult for even the most unobservant person to appreciate the value of treatment by which a helpless burden on the community is sometimes converted into an efficient and self-supporting worker. The reputation of the hospital at Jerusalem has had the effect of attracting to it crowds of patients far beyond the ability of the staff to cope with, so much so that for a time those coming from the surrounding country found it difficult to obtain the advice they sought. The report explains that it was the practice for the doors to be opened early in the morning of each out-patient day and to be closed as soon as patients in sufficient number to afford full occupation for the day had been admitted. It was therefore necessary for applicants to arrive early in order to have any chance of being treated, and as they found this out they came earlier and earlier until a crowd often assembled during the night and filled the waiting room with a rush as soon as the doors were open. For such nocturnal assembling the residents in the city had many advantages over country people who often came from remote villages, so that the latter were to a great extent deprived of the benefits of the charity by the former and the attendance of the fellaheen became diminished and discouraged. Under these circumstances Dr. W. E. Cant, the surgeon, frequently applied for further help, and the Chapter of the Order has sanctioned the appointment of an assistant surgeon, on whose arrival three days will be reserved for the fellaheen and three for the residents in Jerusalem. The surgical statistics of the hospital for the year ending Michaelmas, 1898, show that during that period 598 in-patients were admitted, the out-patients made 12,080 attendances, and 1330 operations were performed. The honorary secretaries of the hospital are Mr. R. Gofton-Salmond, 72, Cheapside, E.C., and Mr. A. A. Gordon, 1, Coates-gardens, Edinburgh. Subscriptions may be sent to the London and Westminster Bank.

OPEN-AIR SANATORIA FOR THE TREATMENT OF TUBERCULOSIS.

IN the article on this subject which was published in THE LANCET of Sept. 9th, p. 724, mention was omitted of the following institutions. At Bournemouth is a large house ("Brinklea") overlooking the golf-links where Dr. Kinsey-Morgan has for some time past received patients for the open-air treatment. At Ventnor, facing the sea, is the "Mount Pleasant Sanatorium," which has room for seven or eight patients. The resident medical officer is Mr. Patrick J. Hart, Dr. Chowry Muthu of Whitehall Park, London, going down once a week. Charge three to three and a half guineas. At Bexhill-on-Sea is another small sanatorium ("Holne Chase") under the care of Dr. Wills. In Ireland the Rossclare Sanatorium, seven miles from Enniskillen, has 14 beds and will shortly open six more. Dr. R. C. Macfie is resident medical officer, Dr. L. Kidd consulting physician. The institution overlooks Lough Erne and was the first of its kind to be opened in Ireland. Terms two and a half to three and a half guineas, with a few rooms at five guineas.

THE SUCCESS OF SANITATION IN HAVANA.

IN the *New York Medical Record* some few months ago the remark was made that should no other benefit accrue to the United States from its war with Spain than the cleansing of Havana and the consequent stamping out of yellow fever, the nation would have every reason to be satisfied with the result. The sanitary regeneration of that most unsavoury city has been diligently pursued since the American occupation and the effects are astonishing. Much has been told of the splendid work of General Wood in Santiago which he found a pest hole and which he has converted into a fairly healthy place of residence, but little has been reported of the efforts put forth by General Ludlow and Major Davis, the medical officers in charge of sanitary matters with the same end in view in Havana. For generations Havana has been a constant source of menace to the health of the dwellers on the American mainland. A very large proportion of the cases of yellow fever occurring in that part of the United States nearest to Cuba has been traced to Havana, therefore it is of the utmost importance that Havana should as quickly as possible be put into a good sanitary condition. A correspondent of the *New York Evening Post* gives some interesting details of General Ludlow's achievements as a sanitary reformer. There have been, according to this writer, within the last few months from 2500 to 4000 cesspools cleaned and disinfected and many of them entirely closed up. The 27,000 houses in Havana, Regla, and Guanabacoa have been thoroughly inspected throughout and proper sanitary measures have been

taken for their cleanliness and disinfection. A new electrozone plant has been constructed under the direction of the army engineers which manufactures electrozone from sea water, to be used for disinfecting the streets, washing the sewers, cesspools, and other places which might be sources of infection. The city garbage is cremated as much as possible at the new cremation plant (some 40 or 50 tons per day), and the remainder not cremated is towed some three miles out to sea and dumped into the Gulf Stream. A great deal of the pavement has been relaid, which was an urgent necessity since all the pavements in Havana are laid upon a dirt foundation and therefore the surface becomes uneven, and as the soil is wet the moisture often oozes up between the cracks of the pavement and in consequence is prejudicial to health. In fact, everything possible has been done to ameliorate the unhealthy state of Havana. These precautions have been attended with a very large measure of success. There never has been so little yellow fever or sickness at Havana as at present. From 1890 to 1894 inclusive the death-rate averaged 400, in 1896 the death-rate was 1539, and in 1897 1056. In this year, up to the time of the writing of the letter referred to above, the death-rate from yellow fever had been seven. This figure is remarkable, more especially when the fact is taken into consideration that the Americans have only had control of the city since Jan. 1st, 1899, before which time it had been for three years occupied by Spanish troops, at times numbering 60,000, extremely dirty in their habits, and that no sanitary precautions whatever were taken by the municipal authorities. All this, however, goes to prove that yellow fever can be driven out by effective measures, and it may be taken for granted that in the course of time Havana will be completely cleansed.

THE COMPARATIVE DIETETIC VALUE OF WHITE AND WHOLEMEAL BREAD.

IT is commonly supposed that wholemeal bread is more nourishing than ordinary white bread because it contains a higher proportion of nitrogenous and mineral substances. But as we have frequently pointed out the nitrogenous value of a given food is not necessarily indicated by an empirical chemical analysis. Not all nitrogenous substances are feeding stuffs, and further it does not follow that the quantity of food partaken of is the quantity of food assimilated. In other words, eating is not necessarily feeding. There are many substances containing a very high proportion of nitrogen which are valueless as food stuffs, and on the contrary there are many edible materials which contain a comparatively small proportion of nitrogenous substances which, however, are completely available for nourishing the organism. We now know that it is not enough for chemical analysis to record merely the proportion of nitrogenous substances: the nature of these substances must be declared without which the food value of a given substance cannot be estimated. It was formerly assumed that wholemeal bread contained more nitrogen than white bread, but in the light of recent analyses this is not true. Whether or not, however, wholemeal bread is superior as regards its nitrogenous contents it is certainly inferior as regards its digestibility. This may be attributed in a large measure to the fact that wholemeal bread contains comparatively large, indigestible, and irritating particles of husk. There seems, however, no reason for doubting that wholemeal bread would be much more digestible if the branny particles were finely comminuted. In several patent breads the germ of the wheat is retained, which adds considerably to the nitrogenous value of the bread. But the germ of wheat tends to excite fermentative changes in the "sponge" and produce an unpalatable loaf. Several processes, however, have been devised which avert the possibility of this undesirable effect. We do not believe that with the improvements in machinery generally the dietetic value of bread has *pari passu* increased. We still hold that a more nourishing article, as it is certainly more palatable, is the old-fashioned farmhouse loaf which presents a gold wheaten colour rather than the blanched appearance which seems to be looked upon as a guarantee of quality in the modern white loaf. Our own laboratory experience, at any rate, shows that probably on account of the increased employment of roller-milling processes the important mineral constituents of white bread have very materially diminished. When it is considered that these constituents play a not unimportant part in supplying the bone-forming factors of the organism this fact assumes a serious importance and may even throw light upon the prevalence of dental decay. On the other hand, wholemeal bread and germ bread contain an enhanced proportion of mineral salts such as the phosphates of lime and potash which are necessary in the building up of the entire human frame.

THE MEDICAL OFFICER OF ST. OLAVES, SOUTHWARK.

THE St. Olave's District Board of Works at their meeting on Sept. 19th continued a discussion upon the removal of human remains from the crypt of St. Thomas's Church, Southwark. The board, it will be remembered, suspended their medical officer from duty under circumstances which were too recently described to need further comment. The Local Government Board has since ordered the board to remove the suspension, holding that Dr. Bond had the right to act as he did. The District Board, in place of complying with the order of the Local Government Board, asked for a public inquiry into the matter. This was refused, and at the recent meeting of the District Board it was resolved, but not without discussion, to adopt the following recommendation of the Works and Finance Committee: "That the Local Government Board be informed that this board (St. Olave's District Board of Works) declines to remove the suspension of the medical officer of health (Dr. Bond) and again asks the Local Government Board to hold a public inquiry into the whole matter."

PLAGUE IN MADAGASCAR.

IN view of the extension of the plague to Portugal and its persistence without any abatement in India and China the announcement that it has reappeared at Tamatave after an absence of about six months is of interest. The circumstances of the first epidemic at Tamatave were briefly described in THE LANCET of March 11th, 1899, p. 713. On Nov. 23rd, 1898, a civilian practitioner informed the authorities that several suspicious deaths had occurred among the native population and bacteriological examination immediately showed that plague had obtained a footing in the town. The epidemic was officially recognised as having continued from Nov. 24th, 1898, to Feb. 3rd, 1899, during which time 296 attacks and 197 deaths were recorded. The figures showing the daily attacks and deaths for this period, arranged according to the nationality of the patients, were eventually published in the *Journal Officiel de Madagascar et Dépendances* of date March 11th, 1899, the totals being: Malagasies, 162 attacks with 101 deaths; "Creoles," 61 attacks with 39 deaths; Asiatics (Chinese and East Indians), 68 attacks with 56 deaths; and Europeans, five attacks with one death. Tamatave has about 6800 inhabitants. The greatest number of attacks on any one day was 15 on Dec. 19th and the greatest number of deaths on any one day was 11 on Dec. 11th. The *Journal* draws attention to the extremely insanitary condition of the town, which is a seaport lying

only from 9 feet to 12 feet above extreme high water-mark. The annual rainfall is about 140 inches; the underground water is permanently very near the surface and during the rainy season it forms pools in the streets.

KISSING THE BOOK.

AT an inquest recently held at Scarborough a witness asked to be relieved from kissing the book. The coroner, however, on learning that the witness took objection on sanitary and not on religious grounds, refused to grant him relief. In taking this course the coroner was absolutely in the wrong and showed an ignorance of the provisions of the Oaths Act of 1888. We have frequently pointed out in these columns that by this Act any witness is at perfect liberty to demand to be sworn in the Scots fashion—i.e., with uplifted hand. His Honour Judge Emden has had this provision of the Act posted up in his court so that any witness can see his rights for himself. By a legal fiction every citizen is supposed to know the law. As a matter of fact most of us do not know it and we cannot help thinking that it should be made a matter of obligation for every official whose duty it is to administer oaths to ask the witness in which form he prefers to be sworn. It is cheering to us to see that the lay press is taking the matter up and in the *Liverpool Mercury* of Sept. 15th is a strongly worded editorial article pointing out the absolute right of any person to be sworn without kissing the book.

BACTERIA AS DESTROYERS OF MASONRY.

BACTERIOLOGY has shown how we may count alike upon friends and foes amongst the myriads of bacteria known to us. The friendly species, however, are decidedly in the ascendancy, but comparatively few pathogenic organisms having been isolated and recognised. Recent researches have shown how important is the rôle of the bacterium in many industrial processes especially where the production of articles of food is concerned. Ascertained facts would seem to teach that bacteria after all may serve us as tiny engineers who can perform stupendous work when associated in myriads so long as they are placed under a favourable environment. The disposal of sewage by purely bacterial agencies, which under suitable conditions convert an offensive material into simpler and innocuous materials, is perhaps the best case in point. But the disintegrating action of bacteria, though perhaps an indirect one, must, according to recent observations, be reckoned with as a source of mischief. At first sight it would seem hardly possible for bacteria to be concerned in the breaking down of a stone wall, yet such would appear to be the case according to some ingenious observations directed to the nature of the decay of cement. The gradual disintegration of the cement-mortar used in water-supply reservoirs is one of the serious troubles met with by water engineers and a trouble which so far they have not been able to avoid with any measure of practical success. Hitherto this action was supposed to be the result of the solvent property of carbonic acid and other mineral substances commonly present in a water-supply. The cement gradually disintegrates and becomes a kind of mud which slowly detaches itself. This strange process is due to the action of none other than that bacterium known as the nitrifying organism. An examination of the mud shows it to be teeming with these organisms. The organism, however, cannot flourish in the absence of nitrifiable pabulum. In its presence, however, nitrous acid is produced which leads most probably to the disintegration of the cement lining of the water reservoir. The nitrifying organism is the one upon which so much depends in the purification of sewage and effete matters. On this account its growth should be encouraged, and, it is curious, therefore, to find that the organism appears as an objectionable factor in the attempt to supply and store an abundance of pure water for drinking purposes.

NINETEENTH REPORT OF THE INSPECTOR OF RETREATS UNDER THE INEBRIATES ACTS, 1879 AND 1888.

IN the report for the year 1898, which is just issued as a Parliamentary paper, an account is given of the "14 retreats licensed under the Inebriates Acts during the year 1898," with details of the working of the Acts and the result of treatment at seven of these institutions. The observations regarding Dalrymple House, Rickmansworth, which may serve as a specimen of the others, are worth noting. During 1898 there were 44 admissions, 19 being scheduled as entering under the Act and 25 as "private" patients. There has been during the past year, as in every preceding one, the difficulty arising from the absence of any retreat for the accommodation of male cases who are destitute of means. A great demand exists for such an institution and a field is open for philanthropic enterprise in this direction. During the year 284 letters and personal inquiries regarding the above were received.

"Judging from the number of influential persons who have made these inquiries year after year it probably only requires the constitution of a committee composed of well-known members recruited from and representing such bodies as the Homes for Inebriates Association, the Inebriates Legislation Committee of the British Medical Association, the British Medical Temperance Association, and the Church of England Temperance Society to successfully formulate and carry out a scheme on the same lines as other philanthropic institutions."

Of the persons admitted gentlemen of no occupation head the list in numbers (26 per cent.). Next follow merchants, clerks, medical practitioners, manufacturers, solicitors, and military officers, in order of frequency. Brandy and whisky are the most commonly used intoxicants; gin is but rarely used, and absinthe is the least used of any. The terms of residence were in 504 out of 518 cases over three months, the average length of the period under treatment of all discharged patients being six and a half months. One-eighth of the cases discharged were re-admitted during the year. Other accounts follow regarding the six remaining institutions referred to above.

MANCHESTER PORT SANITARY AUTHORITY.

WE have received a copy of a leaflet given to the captain of every ship leaving Manchester for a foreign port by order of the Manchester Port Sanitary Authority. It is addressed "To masters of vessels and to whom it may concern." It contains simple directions in reference to plague and its prevention. In it is explained the mode of spread of the disease, and the sources by which the disease can be "caught" are duly set forth. The symptoms of the most common type are described and the measures are detailed by means of which the spread of the malady on board ship may be stayed. The information thus given in a small space is most valuable and should prove most useful to those for whom it is intended, and the Manchester authorities have done good work in causing the leaflet to be freely distributed. In another leaflet the precautions taken by the Manchester Port Sanitary Authority to prevent the introduction of plague into that city are enumerated. It is the duty of the Liverpool Port Sanitary Authority to inspect ships bound for Manchester from infected countries and to remove and treat cases of plague at Liverpool. Ships bound for Manchester are also, when necessary, to be detained at Liverpool. The Manchester inspector (who holds a master mariner's certificate and the certificate of the Sanitary Institute),

is stationed at Eastham during periods when cases of plague are likely to be brought to this country. Every vessel arriving from foreign countries must pass through the locks at Eastham on its way to Manchester, and as the passage takes place about the time of high water the inspector is on the quay at each tide and is consequently able to question the captain of each vessel and to make the necessary examination. Upon information from the inspector that a ship is proceeding to Manchester from a country where plague is known to exist the medical officer boards the ship at Barton or Mode Wheel locks and examines the crew before the ship goes into the docks. If the vessel is destined for one of the places lower down the canal the nearest deputy medical officer is communicated with. Under all these precautions plague is hardly likely to be imported into Manchester, and the sanitary authority should receive due praise for the completeness of the arrangements.

THE EDUCATION OF WORKHOUSE CHILDREN.

ON medical, educational, and ethical grounds there should be no workhouse children, for children should certainly not be placed in workhouses. The infection, both bodily and mental, to which they are exposed by contact with the social scum which drifts into these places is most undesirable for the developing and receptive mind. It is one of the problems that guardians are repeatedly striving to solve as to how to prevent this undesirable contagion. The difficulties of the situation are certainly great, for the parents often come in with a whole family of children, and if they are only staying a short time it is impossible to send them away to school, which is perhaps in the country, half a day's journey away. And, again, if the children are admitted alone it is difficult to be able to dispose of them immediately. Meantime the children are more or less let loose in the workhouse or, at any rate, have nothing to occupy their time and keep them out of mischief. We learn from a report of the medical officer of the St. Pancras Workhouse that no fewer than 1604 children of all ages and conditions were admitted into the St. Pancras Workhouse during the year ending June 30th last. It is sad to contemplate the incalculable amount of harm that these children may incur and the time that may be lost which should be otherwise utilised for educational purposes. The problem is a difficult one and the medical officer in his report makes the admirable suggestion that an Intermediate School should be established as part of, though separate from, the workhouse, where such children could be placed immediately on admission. Here they could be treated medically if sick, and could be educated to some extent, and it would serve also as a sort of quarantine department where any chance infection which they might have incurred would have time to develop. Dr. Dunlop, the medical officer, thinks that St. Pancras Workhouse could supply such a school with at least an average population of 50 children. The scheme certainly has our hearty approval and it may be inferred from this report that it could be carried out without much expense. Certainly the end in view and the benefit which would thus accrue to the rising generation would amply justify the outlay.

THE ANTIRABIC INSTITUTE OF BOLOGNA.

OUR Rome correspondent writes under date Sept. 17th:—"In Italy at least the parent Pasteur Institute is, like Wisdom, justified of all her children. Ten years ago Bologna opened on the Parisian model her 'Istituto Antirabico' and its head, Professor Ivo Novi, has just issued his report on the results achieved in that decennium. The patients under treatment were 3083, of whom more than one-third (1182) were under ten years of age; there were also old men over 90 years of age, infants of six months at the breast, and women in an advanced stage of pregnancy. The year 1898 was that in which the cases admitted were most numerous—504. The bites (*morsicature*) were most frequent in the rural districts, where the peasant keeps a dog even when he has not bread enough for his children and when naturally the animal goes on the prowl for food and so exposes himself to contact with 'animali rabbiosi.' In these districts the muzzle is not worn, it being superstitiously supposed to aid the development of rabies, although in Germany, where the muzzle is in universal use, rabies is well-nigh unknown and 'morsicature' equally so. The Bologna Institute received cases from all the surrounding provinces, Ferrara supplying the most (319) and Teramo 16, while such was its repute that it had cases from the island of Sardinia and even one from Egypt. Moreover, in the same decennium there were sent to it from all parts of Italy 1295 animals, alive or dead, for the purpose of diagnosing—often enough on the vaguest suspicion—the presence of rabies. Within the decennial period the deaths from actual hydrophobia were two, giving a mean of one death out of 1538 persons reated—that is, 0·064 per cent. On the other hand, taking into account all the cases of death noted in the decennial period as due to the concurrence of other maladies in addition to rabies, the number was 18, carrying the mean to one death out of 171 individuals. All these 18 had been bitten on exposed parts of the person. Of those in whom the bites were on parts covered with clothing not one died. Professor Novi's report is valuable for its other details, particularly on the results of expert diagnosis, methods of cure, after-treatment, &c., and is in every way creditable to the 'mother of universities,' surrounded, as she now, is by three rival 'istituti antirabici,' those of Padua, Faenza, and, quite recently, of Florence."

King's College Hospital and Westminster Hospital were re-opened to out-patients at the beginning of this week, after having been closed for over two months for alterations and repairs. At King's College Hospital the wards have been re-floored and the building installed with electric light. In-patients will not be received there until next week. At the Westminster Hospital the out-patients department has been entirely reconstructed.

PROFESSOR KARL STOERK, the well-known laryngologist, died on Sunday at Hietzing, near Vienna, in his sixty-seventh year. He was a pioneer of much modern laryngology and the author of treatises on the use of the laryngoscope published a quarter of a century ago.

SIR WILLIAM TURNER is the President-elect of the British Association for next year, when the Association will meet at Bradford. The British Association could not have chosen a better man in the kingdom to preside over a society whose object is the advancement of science.

SURGEON-MAJOR-GENERAL S. A. LITHGOW, C.B., Superintendent of the Edinburgh Infirmary, died on Wednesday morning at his residence at Melrose. He was an admirable and popular official with a distinguished military record.

THE Introductory Lecture at the Royal Veterinary College will be delivered by Professor Sims Woodhead, M.D., F.R.S. Edin., on Monday, October 2nd, at 12 o'clock.

WE learn that at Mauritius for the week ending Sept. 14th there were 59 cases of plague, 39 of which were fatal.

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF INSPECTORS OF THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

DR. L. W. DARRA MAIR'S *Report to the Local Government Board upon the Sanitary Circumstances and Administration of the Urban District of Gainsborough, with Especial Reference to the Prevalence of Fever Therein.*[1]—The town of Gainsborough in Lincolnshire, which had in September, 1897, an estimated population of 19,540, has for some time figured prominently in the Registrar-General's returns from its excess of enteric fever and the subjoined table shows the extent to which, during the ten years 1888-97, the death-rate in Gainsborough from "fever" and diarrhœa exceeded the death-rate from the same causes in England and Wales and in the 33 great towns.

1888 to 1897.	Death-rate per 100,000 inhabitants.	
	"Fever."	Diarrhœa.
Gainsborough	26	121
England and Wales	17	63
Thirty-three great towns	19	86

It has to be noted, too, that Gainsborough during the decade above referred to has never in any one year been free from "fever," and it is a depressing fact to learn from Dr. Mair's report that the "fever" shows a tendency to increase rather than to diminish. Unfortunately, for the sake of etiological investigation, the people of Gainsborough elect by preference to remain ignorant of the prevalence of enteric fever in their midst and have apparently determined, until the Notification Act is forced upon them, as it will be next year, to shut their eyes to the suffering from infectious disease which takes place in their town. History will probably have something to say to towns such as these, which for practically a decade refused the most elementary precautions open to them in the matter of disease prevention. Dr. Mair in his search for information was compelled to seek it very much in the dark, and had it not been for the assistance which the medical practitioners and the District Nursing Association were able and willing to afford him he could not have learnt that between the beginning of 1897 and the end of August, 1898, there were at least 62 cases of enteric fever, an attack-rate which is double the mean annual attack-rate of 50 towns which have had the precaution to adopt compulsory notification. As was to be expected, Dr. Mair had some difficulty in tracing out the immediate cause of what we fear must be termed this endemicity of enteric fever in Gainsborough, but it appears that there are numerous factors capable of keeping alive the disease; indeed, it is this very multiplicity of possible causes that renders it well-nigh impossible to discriminate and, in the absence of any notification returns showing the distribution of the disease in the past, makes it difficult to discover with accuracy the most regularly invaded areas or the age and sex incidence of the disease. But the 62 cases above referred to were distributed among only 46 houses and in a manner going far to establish the fact that the disease presented a considerable power of infectivity, and, as bearing out this view, it has to be mentioned that 31 per cent. of the total number of attacks were traceable to previous cases. There was also some evidence pointing to the conclusion that certain houses invaded had been repeatedly so invaded in former years. The water- and milk-supply and the drainage and excrement disposal of the invaded houses were all passed carefully in review by Dr. Mair, but in the main with negative results, and on the whole he is inclined to look upon the excessively polluted soil of Gainsborough as the means of perpetuating the prevalence of enteric fever. There are evidently ample opportunities for excessive soil pollution and practically no provision for its cleansing; indeed, Dr. Mair expresses the opinion that, having in view the facilities for the spread of enteric fever in the town, it is matter for surprise that a grave calamity has not ere this overtaken the inhabitants. Dr. Mair recommends improvements in many directions, the most important being a system of modern sewerage and the disestablishment of the old privy-midden system. He also advises the District Council to encourage the isolation of patients in their fever hospital rather than, as at present, to practically discountenance its use by the imposition of what are apparently onerous conditions. So, too, the council is advised to appoint a medical officer of health and an inspector of nuisances at such salaries as will enable them to be of use to the district and to improve its lamentable conditions. The Gainsborough Urban District Council have evidently been oblivious of their duties and Dr. Mair's excellent report should have the effect of awakening them to their responsibilities.

[1] Eyre and Spottiswoode, Fleet-street, E.C. Price 6d.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Nottingham Urban District.—Dr. Philip Boobbyer in presenting his ninth annual report states that the health of Nottingham during 1898 presented no features of special interest or importance. The estimated population of 236,137 yielded a birth-rate of 28 8 and a general death-rate of 17 2 per 1000. The special requirements of the city from a sanitary standpoint are: (1) a small-pox hospital and an extension of the existing isolation accommodation, (2) a public abattoir, and (3) additional refuse destructors. Dr. Boobbyer has now for several years made a careful study of the behaviour of enteric fever in Nottingham and he has in consequence enunciated certain propositions which we think are worthy of reproduction:—

Summary.—I will now endeavour to summarise briefly the principal conclusions to be drawn from our local experience of enteric fever in recent years. So far as I am able to judge they appear to be to the following effect:—

1. That a sustained air temperature above 55° F. is commonly associated as a precedent condition with an autumnal rise of enteric fever prevalence and that a lower average temperature in the summer months is commonly followed by a comparative diminution of the disease.

2. That the disease is endemic in thickly-inhabited and poor urban districts situated upon various geological formations (alike on the dense and the porous, the wet and the dry), and at various elevations, wherever those conditions obtain which are likely to lead to soil pollution.

3. That good neighbourhoods, even when their dwellings are built thickly upon old made ground and furnished with such soil-polluting agencies as pail closets, are far less liable to the endemic form of the disease than the poorer neighbourhoods similarly circumstanced.

4. That the incidence of endemic enteric fever is far heavier upon houses furnished with dry closets than upon those with w.c.'s and upon midden-privy than pail-closet houses, and that this heavier incidence upon houses with dry closets is very much more marked in poor than well-to-do neighbourhoods.

5. That enteric fever infection is liable to spread from person to person, even in well-managed hospitals, and therefore very much more so in the dwellings of the poor.

While dwelling upon the need for further isolation accommodation Dr. Boobbyer expresses the opinion that no scarlet fever hospital can do itself justice unless it be provided with a convalescent block in which all patients must stay for at least a fortnight prior to their discharge. He thinks that, in spite of the opposition which has been evinced in some quarters against the fever hospital, its operations have undoubtedly held scarlet fever in check and there have been, he tells us, no such epidemics since notification and isolation have been in force as there were before the advent of either of these provisions. We notice that the corporation of Nottingham now possesses a lethal chamber in which dogs, cats, and other small animals pass by the aid of chloroform vapours and carbonic acid gas to a presumably painless end. Some 422 dogs and 64 cats have had their existence terminated in this lethal chamber during the past 12 months.

Huddersfield Urban District.—Mr. Ernest George Annis embodies in his current annual report complete plans of the new fever hospital, euphoniously but very properly called the "Huddersfield Sanatorium," which was opened last year by Sir William Broadbent, Bart. The arrangements seem to be very complete and Huddersfield is to be congratulated upon the new acquisition to its defences. A survey of the watershed supplying the borough with water was made by the medical officer of health during last year and it cannot be said that the conditions which were detected were altogether reassuring. Mr. Annis makes several recommendations, among which we find the necessity for a monthly chemical and bacteriological examination. As regards the prevention of tuberculosis the veterinary surgeons in the district are

invited by the corporation to notify to the medical officer of health all cases of this disease occurring in milch cattle within the borough, and for every such notification the corporation will pay a fee of 1*s*. It is also provided by the corporation that where there is doubt as to the nature of the disease they are prepared to supply the veterinary surgeon with the necessary tuberculin and to pay him a fee of 2*s*. 6*d*. for performing the operation.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 33 of the largest English towns 6877 births and 4617 deaths were registered during the week ending Sept. 16th. The annual rate of mortality in these towns, which had decreased from 26·8 to 25·2 per 1000 in the three preceding weeks, further declined to 21·1 last week. In London the rate was 18·8 per 1000, while it averaged 22·6 in the 32 provincial towns. The lowest death-rates in these towns were 10·6 in Norwich, 13·5 in Croydon, 15·7 in Derby, and 16·8 in Cardiff; the highest rates were 30·9 in Liverpool, 31·0 in Preston, 31·7 in Wolverhampton, and 32·5 in Salford. The 4617 deaths in these towns included 1185 which were referred to the principal zymotic diseases, against 1743 and 1588 in the two preceding weeks; of these, 931 resulted from diarrhœa, 69 from diphtheria, 61 from "fever" (principally enteric), 55 from whooping-cough, 39 from measles, 27 from scarlet fever, and three from small-pox. The lowest death-rates from these diseases occurred in London, Croydon, Bristol, Norwich, Derby, and Birkenhead, and the highest rates in Wolverhampton, Salford, Burnley, and Preston. The greatest mortality from measles occurred in Burnley; from scarlet fever in Bradford; from "fever" in Sheffield, Halifax, and Birkenhead; and from diarrhœa in Brighton, Wolverhampton, Bolton, Salford, Burnley, and Preston. The 69 deaths from diphtheria included 22 in London, 10 in Leeds, six in Leicester, and five in Birmingham. Three fatal cases of small-pox were registered last week in Hull, but not one in any other of the 33 large towns; and no small-pox patients were under treatment in any of the Metropolitan Asylums Hospitals. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on Saturday, Sept. 16th, was 2640, against 2538 and 2549 at the end of the two preceding weeks; 336 new cases were admitted during the week, against 225, 252, and 298 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 131 and 170 in the two preceding weeks, declined again last week to 133, and were 18 below the corrected average. The causes of 28, or 0·6 per cent., of the deaths in the 33 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leicester, Salford, Bradford, Leeds, Hull, and in 16 other smaller towns; the largest proportions of uncertified deaths were registered in Bristol, Birmingham, Nottingham, Liverpool, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 24·1 and 22·6 in the two preceding weeks, declined again to 20·2 per 1000, during the week ending Sept. 16th, and was 0·9 per 1000 below the mean rate during the same period in the 33 large English towns. The rates in the eight Scotch towns ranged from 11·7 in Aberdeen and 13·5 in Perth to 22·5 in Glasgow and 22·8 in Leith. The 616 deaths in these towns included 136 which were referred to diarrhœa, 15 to "fever," eight to whooping-cough, seven to diphtheria, five to measles, and three to scarlet fever. In all, 174 deaths resulted from these principal zymotic diseases, against 217 and 225 in the two preceding weeks. These 174 deaths were equal to an annual rate of 5·7 per 1000, which almost corresponded with the mean rate last week from the same diseases in the 33 large English towns. The fatal cases of diarrhœa, which had increased from 70 to 193 in the five preceding weeks, declined last week to 136, of which 69 occurred in Glasgow, 24 in Edinburgh, 17 in Dundee, and nine in Leith. The deaths referred to different forms of "fever," which had been nine and 10 in the two preceding weeks, rose again last week to 15, of which nine were recorded in Glasgow. The eight fatal cases of whooping-cough showed a slight decrease from the number in the preceding week, and included four in Glasgow and two in Leith. The deaths from scarlet fever occurred in Edinburgh, Glasgow, and Greenock. The deaths referred to diseases of the respiratory organs in these towns, which had been 83 and 54 in the two preceding weeks, rose to 68 last week, and were equal to the number in the corresponding period of last year. The causes of 30, or 5 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 30·6 and 37·4 per 1000, in the two preceding weeks declined again to 35·1 during the week ending Sept. 16th. During the past four weeks the death-rate in the city has averaged 33·5 per 1000, the rate during the same period being 21·8 in London and 21·0 in Edinburgh. The 235 deaths registered in Dublin during the week under notice were 16 below the number in the preceding week, and included 80 which were referred to the principal zymotic diseases, against 58 and 72 in the two preceding weeks; of these, 45 resulted from diarrhœa, 23 from measles, nine from "fever," one from scarlet fever, one from diphtheria, one from whooping-cough, and not one from small-pox. These 80 deaths were equal to an annual rate of 11·9 per 1000, the zymotic death-rates during the same period being 3·5 in London and 5·1 in Edinburgh. The deaths from diarrhœa, which had been 36 and 42 in the two preceding weeks, further rose to 45 last week. The 23 fatal cases of measles exceeded by six the number recorded in the preceding week. The deaths referred to different forms of "fever" which had been four and eight in the two preceding weeks, further rose last week to nine. The mortality from scarlet fever and from whooping-cough was below, while that from diphtheria corresponded with, the mortality in the preceding week. The 235 deaths in Dublin last week included 74 of infants under one year of age, and 32 of persons aged upwards of 60 years; the deaths of infants exceeded the number recorded in the preceding week, while those of elderly persons showed a decline. Two inquest cases and five deaths from violence were registered, and 83, or more than a third, of the deaths occurred in public institutions. The causes of 10, or more than 4 per cent., of the deaths in the city last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

FLEET SURGEON ALEXANDER GEORGE PEMBERTON GIPPS has been placed on the Retired List of his rank at his own request; Fleet Surgeon Horace E. F. Cross has also been placed on the Retired List at his own request, with the rank of Deputy Inspector-General of Hospitals and Fleets.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Blennerhassett is nominated for service in the Bombay Command. Lieutenant-Colonel E. J. Fairland (retired list) is selected for duty with the troops at Maidstone. Major G. W. Brazier-Creagh joins at Woolwich. Lieutenant G. J. S. Archer is placed under orders for service in India. Colonel W. F. Stevenson, Professor of Clinical Military Surgery at Netley, who completed his period of service on August 10th, is reappointed for a further term.

INDIA AND THE INDIAN MEDICAL SERVICE.

The services of Major E. A. W. Hall (Bengal) are placed permanently at the disposal of the Chief Commissioner of Assam. The services of Major H. D. Rowan, R.A.M.C., are replaced at the disposal of the Military Department. Dr. Dhingra is temporarily engaged for plague duty and his services are placed at the disposal of the Government of India in the Foreign Department. Dr. F. W. Twidale, doing temporary plague duty in Sutna, Central India, is transferred on the same duty to Ajmir, Rajputana. Captain W. Henvey is appointed to officiate as Superintendent of the Central Jail, Raipur. On being relieved by Major W. L. Price Captain P. F. Chapman, Officiating Civil Surgeon, Bilaspur, is transferred in the same capacity to Seoni.

VOLUNTEER CORPS.

Rifle: 3rd Volunteer Battalion the King's (Liverpool Regiment): Surgeon-Lieutenant J. McMullen to be Surgeon-Captain. 2nd Volunteer Battalion the Duke of Cambridge's

Own (Middlesex Regiment): Surgeon-Lieutenant E. Farr to be Surgeon-Captain.

VOLUNTEER MEDICAL STAFF CORPS.

The London Companies: Alexander Granville to be Surgeon-Lieutenant.

VITAL STATISTICS IN THE AUSTRIAN NAVY.

In the year 1896 the average strength of the Austrian navy was 9871 officers and men, of whom 3728 were employed on land and 6143 afloat. The admissions to hospital, invalidings out of the service, and deaths were at the rate of 682, 21·36, and 9·30 per 1000 respectively, but if seven suicides, eight accidental deaths, and four casualties in an affray with the natives at Guadalcanar (one of the Solomon Islands) be deducted the death-rate falls to 7·36 per 1000. In 1897 the average strength was 10,058 (3775 ashore and 6283 afloat), while the admissions to hospital and invalidings were at the rate of 579 and 24·04 per 1000. Deducting seven deaths by suicide and 14 by accidents the death-rate for the year was only 5·06 per 1000. Judged by the extent of their hospitalisation the health of the men in sea-going ships was better than that of their comrades on land, the admissions per 1000 of strength having been 577 afloat against 708 ashore. During the biennium 604 cases of typhoid fever were treated, but of these no fewer than 560 occurred at Pola in Istria, between the beginning of November, 1896, and the end of February, 1897. Early in the former year some sporadic cases showed themselves, and others continued to appear during the summer and autumn until the end of October when the disease burst forth in epidemic form all over the town. In the military portion of the garrison there were 725 cases, and the number officially reported among the civilian population was 1148. By general consent the Caroline spring, from which the central water-supply is derived, was incriminated as the cause of the epidemic. From a bacteriological investigation which was instituted locally and received subsequent confirmation at both Gratz and Vienna it appears that in dry weather this water remains wholesomely free from germs, but that after rain unmistakable traces of fæcal contamination are always present. Considering that a great part of the watershed from which the spring is fed is thickly inhabited this is not to be wondered at; and further evidence of the water-borne character of the disease is furnished by the fact that in the present instance, as well as on several previous occasions, the typhoid outbreak was preceded by a heavy rainfall. When the epidemic first showed itself excavations for a new series of water-pipes were in progress in most of the streets, but that the typhoid fever was not owing to the disturbance of the subsoil thus occasioned seems to be proved by the immunity of the excavators, of whom only two out of a total of 150 were attacked. In combating the outbreak dependence was at first placed upon water-boiling and after that upon sterilisation by means of chloride of lime and hyposulphite of soda, but in neither case were the results satisfactory. It was not until water from the Tivoli spring was substituted for that from the Caroline that the disease showed any signs of abatement. Amongst other points of interest it may be mentioned that in 1896 there were 261 cases of sunstroke or heat apoplexy without a death, whereas in 1897 out of 24 cases two proved fatal. Almost the whole of the first series occurred on land at Pola during July and August, 1896, the compiler's remarks in this connexion being to the following effect: "The very large number of cases that in 1896 were diagnosed as heatstroke or sunstroke shows that persons whose work keeps them on shore are more liable to suffer from a high temperature than their congeners afloat."

THE TRANSVAAL CRISIS.

It must be obvious to everyone, even to the least thoughtful, that affairs in South Africa have reached such a state of tension that, unless the Transvaal Government gives way, war is imminent. No one can now tell whether it can be averted or not. There is, as might be expected, much difference of opinion—should unfortunately a campaign be inevitable against the Boers on the part of this country—as to the difficulties that will have to be overcome before any final settlement can be reached. Where both sides are brave and determined and well armed with the most modern weapons of precision the gravity of the task is not likely to be under-estimated any more than, with our previous experience to guide us, it is likely that the error will be repeated of under-estimating the enemy. A very large military force will be required, with, of course, a corresponding provision of hospitals and medical service. If we may judge from the reports published in the daily press it is probable that the Boers may speedily assume the aggressive. There must be in this, as in all campaigns conducted on a large scale, periods of some anxiety to be passed through. It is highly probable that there will be a good deal of hard fighting before the war is ended and quite possible that the enemy may be more or less successful in their encounters at the beginning of the campaign, but there cannot be a doubt as to what will be the final end of the struggle which is really one for maintaining our supremacy in that part of the world. We can only trust that an ample supply of medical officers, hospitals and hospital stores will be forthcoming. We suspect that in this as in all wars the difficulty will be mainly one of transport, and we are glad to see that orders on a considerable scale have already been issued for the purchase of transport animals in America and in South Africa.

DEATHS IN THE SERVICES.

Fleet Surgeon Robert Willcox, on Sept. 5th, in his eighty-fifth year, at Southsea. He joined the service as assistant surgeon in 1841. He was surgeon of the *Spitfire* during the Crimean War and was landed at the battles of Alma and Inkerman, and assisted the army medical service in the care of the wounded on the field. He was also at the bombardment of Sebastopol, the taking of Kertch, the bombardment and capture of Kinburn, and the destruction of Sulina (Turkish and Crimean medals with Sebastopol clasp). He was appointed Fleet Surgeon in 1863 and retired in 1870. He was granted the Greenwich Hospital pension in June, 1896.

Surgeon-Major-General Stewart Aaron Lithgow, C.B., D.S.O. (retired), A.M.S., Superintendent of the Edinburgh Royal Infirmary, on Sept. 20th, in his sixty-seventh year, at Melrose. He entered the army in 1855, served at the Cape and in the Indian Mutiny, being wounded at the siege of Delhi. He also served in Egypt in the Nile Expedition of 1884–85 as Principal Medical Officer on the lines of communication (Egyptian medal and Khedive's bronze star). He retired in 1893.

The *Jelunga* (chartered troopship) sailed from Southampton on Sept. 20th with 55 officers, three ladies, 1047 of all ranks, 64 soldiers' wives, and 63 children, for Malta, Port Said, and Natal. Major H. O. Trevor, R.A.M.C., is in medical charge of the troops.

Correspondence.

"Audi alteram partem."

SYPHILIS OF THE STOMACH.

To the Editors of THE LANCET.

SIRS,—The descriptions of cases diagnosed as syphilis of the stomach which have appeared in THE LANCET[1] are very interesting to me because of a case I had which, I thought, came under the same heading.

My patient was a thin pale individual, aged 40 years. I had treated him previously for a tubercular syphilide over the sacrum which cleared well away under potassium iodide. He came to me in August, 1897, with a troublesome cough, which was accentuated while on his back in bed. He complained of a pain in the pit of the stomach. Examination of the chest revealed nothing, so that a simple cough mixture was thought sufficient to relieve the symptoms. A fortnight later after a heavy day in the harvest field, while walking from his work and having a heavy tarpaulin thrown over his shoulder, he suddenly felt an acute pain in his stomach as of something having given way. He was uneasy for the rest of that night and early the next morning he began to vomit blood and to pass it per rectum. The vomiting continued at intervals during the day and until the following morning when I saw him. I found him lying in bed utterly prostrate, his body covered with cold sweat and well-nigh

[1] An annotation on a case by Dr. Dubuc in La France Médicale is to be found in THE LANCET of July 16th, 1898, p. 164, and the case is described by Dr. Dalgliesh in THE LANCET of August 12th, 1899, p. 410.

pulseless. Restlessness was marked and from time to time he uttered feeble moans. He complained of sickness, faintness, and a pain in the pit of his stomach. He appeared dreadfully anæmic, his tongue was dry, and his abdomen was distended with flatus and tender to the touch over the epigastrium. The recti resisted pressure by the tips of the fingers. Rest, ice to the epigastrium, and perchloride of iron in drop doses of the liquor sufficed to stop the hæmatemesis, but the following day brought a fresh complication, to wit, stercoraceous vomiting. Strange to say, this disagreeable innovation did not persist. Food by the mouth had been stopped from the first and this perhaps may account for the cessation of the vomiting, which only occurred during the morning of this day. The vomited material was very fœtid.

At this stage of the attack I wrote to a well-known Liverpool surgeon asking for his advice with a view to operation. I thought that, an opening having been made between the stomach and the colon, there would be very little likelihood of a satisfactory termination to the case unless that opening were closed.

The surgeon did not advise operation. He thought that considering the history the case was in all probability one of malignant ulceration and that the prognosis would be bad in any case. I therefore continued the rectal feeding and waited. Strange to say, there was no return of the fæcal vomiting after the first day.

After a fortnight of rectal feeding fluid nourishment was allowed by the mouth and gradually increased. The rectal feeding was discontinued. One of the most troublesome symptoms to deal with was insomnia All the ordinary hypnotics produced disagreeable effects and their useful effect did not last. Potassium iodide in five-grain doses thrice daily cured the insomnia. The patient was up and moving quietly about in a month from the onset of the illness. He was examined in June, 1899. The first attack has not been repeated, but warnings of its approach in the shape of digestive disturbances with excessive flatulence and tenderness over the epigastric region have recurred at intervals up to the present time. During these threatened attacks he has been kept in bed, dieted, and given iodide of potassium. Under this treatment the symptoms have passed off quickly. In appearance he is still cadaverous and anæmic. He says he feels very well. His height is 5 ft. 10½ in., and weight is 11 st. He has evidently not lost ground. The heart, lungs, and liver are normal. There is no skin rash, and no tenderness over the epigastrium on pressure. He sleeps fairly well. As to the past history, by occupation he was first a fireman and then a policeman. At a fire in 1883 he sustained an injury to his back which kept him in bed for two months in hospital. He states that he has never had syphilis. Since the accident in 1883 he has never followed any occupation regularly, but has tried first one thing and then another. As to alcohol he has drunk a good deal of beer in his younger days, but for the last few years he has been very abstemious. I should add that the younger children present Hutchinson's signs of hereditary taint in their first teeth.

I am, Sirs, yours faithfully,
R. LUCIUS WOOD, M.B., Ch.B. Vict.

Knowsley, Lancashire, Sept. 20th, 1899.

"EPISTAXIS DUE TO A LEECH."

To the Editors of THE LANCET.

SIRS,—Mr. Manasseh's case of epistaxis due to a leech emphasises the importance of a careful local examination in cases of hæmorrhage from the nose. Mr. Manasseh states that he has not found "that the leech is given as a cause of epistaxis in any of the text-books." In my book on "Diseases of the Nose and Throat" under the head of Epistaxis I say: "Leeches sometimes give rise to severe hæmorrhage." While I am pen in hand I should like to mention in connexion with the annotation in THE LANCET of Sept. 16th, p. 796, on the Treatment of Aneurysm by the Subcutaneous Injection of Gelatin that I tried this plan of treatment in a patient with aneurysm of the first part of the arch of the aorta but without any effect on consolidating the aneurysm. In spite of this failure I had quite made up my mind even before reading your annotation to give the treatment another trial, as it is attended with but little risk or pain. I am, Sirs, your faithfully,

F. DE HAVILLAND HALL.

Wimpole-street, W., Sept. 18th, 1899.

THE GAPS IN THE ROYAL ARMY MEDICAL CORPS.

To the Editors of THE LANCET.

SIRS,—*Truth* on Sept. 14th comments on the failure of the Royal Army Medical Corps to fill vacancies. At the last examination for 28 places only 14 were filled. *Truth* makes a reasonable suggestion—that candidates holding recognised diplomas should be only examined physically. It does seem strange why medical men who hold diplomas obtained only after the most strict and searching examination—examinations deemed sufficient by the General Medical Council for all other appointments—should be subjected to a further examination for commissions in the Army and Navy Medical Departments. Owing to a recent order of the General Medical Council practitioners are debarred from employing unqualified assistants. This has increased the demand for medical men in civil practice. If commissions in the Royal Army Medical Corps were granted after a strict physical examination and a three months' military training there would be little difficulty in selecting men of the very best physique for the Royal Army Medical Corps, which at the present time is nearly 100 short.

I am, Sirs, yours faithfully,
EXCELSIOR.

Sept. 20th, 1899.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The General Alarm of Plague and the Demand for the Prophylactic.—The Progress of the Epidemic.—The Escape of the Central Provinces.

THE spread of plague westward to Spain and Portugal seems to have excited more or less general alarm and I hear that an unprecedented demand has suddenly arisen for the plague prophylactic fluid. The Government of India have been asked the cost of supplying from 50,000 to 100,000 doses and the earliest date at which this quantity could be despatched. It is also desired to know if in case of need 50,000 doses a week could be sent to London. Russia desires to obtain a considerable stock for Port Arthur. Italy has been making inquiries for home use and also Portugal in order to inoculate at Mozambique. The present laboratory is at Government House. Parel, Bombay, and has only recently been fitted up by the Government of India. About 10,000 doses a day can be turned out, but it is thought that still further enlargements will be required if the demand should increase beyond this amount.

The plague in India is still spreading, the returns for the week ending August 26th showing an increase of mortality to 3921 from 3585 in the previous week. To show the peculiar limitation of plague there were of this total no fewer than 3682 deaths in the Bombay Presidency, Poona City alone returning 1062 deaths. This frightful mortality in Poona has continued for the past three weeks and is at the remarkable rate of over 500 per thousand per annum. Several more Europeans have been attacked and I hear also that three nurses belonging to the Sassoon Hospital are down with enteric fever. Over 500 patients are in the General Plague Hospital. There are signs, however, that it is beginning to abate. Elsewhere throughout India little change is reported. Belgaum and Nasik districts and Kolapur state each return nearly 500 deaths. A few cases are reported from Bangalore City. There is no sign of diminution of plague in Calcutta, where about 40 cases are being reported weekly. There is, however, an ominous increase in the general mortality of the city of Bombay.

It is a remarkable circumstance that while plague has ravaged the adjoining districts of Bombay and the Deccan it has on each occasion of its appearance been apparently repelled from the territories of the Central Provinces. Small outbreaks occurred last November at two places and in one the disease was discovered on the occurrence of the very first case. Prompt and stringent measures were adopted. At the other place 19 cases had occurred when it was reported, but the quarter of the town was immediately cleared of all its inhabitants. Subsequently as cases continued to break out the whole town of 10,000 people was emptied. By March the disease was completely stamped out. At two other places the same

methods proved successful. These instances have been reported to show that as long as an outbreak can be discovered at once it can generally be suppressed, and it is maintained that the measures which have proved so successful consisted, first and most important, of clearing out the people from the suspected quarter followed by a preliminary disinfection of the tainted houses. The houses were then unroofed so as to give them a thorough exposure to the sunlight; then the quarter was disinfected a second time prior to re-occupation and finally the stocks of grain were disinfected and the people encouraged to submit to inoculation. The Central Provinces Government insist that after the isolation of the actual patients evacuation is the most effectual means of dealing with the evil, but it must be thorough, all communication with the deserted quarter being cut off.

I regret to hear that there has been a riot at Ahmednagar. The people decline to accept both segregation and inoculation. All the shops are closed. The collector's house is surrounded by police and troops have been posted to guard the city gates. The natives of some of the Mofussil towns believe that there is no armour against fate and they seem to prefer the most merciless treatment by nature to the troublesome and perhaps uncertain precautions of modern sanitary science. The people in some of these places will not be convinced that the fury of the plague can be lessened by inoculation or the attack evaded by segregation. And yet how different at Hubli and Gadaz where the natives came in thousands to be inoculated and paid for the operation as well. At Hubli, it will be remembered, the inoculated were given such privileges that it was worth the while of the natives to go through the operation over and above the immunity conferred by the process itself. Nowhere else apparently has this full concession to inoculation been adopted and nowhere else has inoculation been so extensively carried out.

The emigration from India to Natal has almost passed unnoticed. In 1898 the total number landed at Natal was 5939. Among the immigrants in the colony there were 1143 births and 856 deaths. The population numbered 59,856 and the health of this large Indian colony is reported as remarkably good. Many have completed their indentures and have subsequently rented land on the coast for purposes of cultivation. About 650 obtained licences to go to the Transvaal goldfields. Many send money to their relatives in India and large amounts are deposited in the Government savings banks. These particulars are of special interest at the present crisis.

August 31st.

THE ORGANISATION OF THE PROFESSION.

(FROM OUR SPECIAL COMMISSIONER.)

(Continued from p. 742.)

Strike of the Stockport Practitioners.—Friendly Societies abandon Medical Aid Insurance.—Formation of the Stockport Provident Medical Guild.

THE medical practitioners of Stockport have constituted a strong union which has brought about some advantageous reforms in the system of contract work or club practice prevalent in that town. It was in 1895 that Mr. J. H. O. Goulden read a paper on this subject before the Medical Society of that town. Members of clubs and medical aid organisations for the most part paid only 2*s.* 6*d.* per annum, and the medical officers protested that such insurance against sickness should not be less than 1*d.* per week, or 4*s.* 4*d.* per annum. The population of Stockport is set down at 70,268, but it now probably exceeds that figure. In 1895 it was roughly estimated that the various benefit societies which had lodges or branches in that town numbered about 4000 members, but these were for the most part adult males; there were no women members and only one or two juvenile lodges. Under these circumstances, as only the healthiest section of the population subscribed and as there was but little sickness, though but 2*s.* 6*d.* was paid, the arrangement was more profitable than the smallness of the subscription would seem to indicate. There were then 38 clubs in the hands of 12 medical practices and 14 medical men, but eight of these medical officers held appointments from 32 out of the 38 clubs. Seeing that wages had increased of late years and that there was considerable prosperity the time seemed suitable to open negotiations with the friendly societies with a view to improve the position of their medical officers. The clubs, however, treated the applications that were made with amusing contempt. One club said that it could not afford to have any medical officer. Of the eight clubs on Mr. Goulden's list not one replied to his letters. Others would not even give themselves the trouble to read the details concerning the proposed alterations. The Stockport Medical Society then sent out a circular to all the medical practitioners within a radius of ten miles convoking a meeting. At this meeting, which was held in the county borough court-house and presided over by the mayor, all the friendly societies were represented. The result was a somewhat noisy discussion and it soon became apparent that the delegates of the friendly societies had come mainly out of curiosity and did not possess power to negotiate. The medical men present had, however, drawn up a scheme and this was signed by 30 practitioners. The following is the text of their proposal:—

1. Minimum payment (men only) 4*s.* 4*d.* per annum on all who have been in benefit during the year and reside within two miles of the club house. 2. Members to attend when able at their medical officer's surgery during his hours. Urgent cases, and cases of sudden illness, are attended at all hours, but otherwise messages for members to be seen at their own houses must be left at the surgery before a fixed hour. Only urgent cases seen on Sundays. 3. Night visits and special visits are liable to be charged for as private visits. 4. Medical attendance to mean advice and ordinary medical and surgical attendance, exclusive of fractures, dislocations, and severe injuries, and all operations beyond opening superficial abscesses. 5. Venereal diseases excluded. 6. Medicine bottles to be provided by patients or paid for. 7. Termination of appointment to be by three months' notice on either side. 8. Members with incomes over £110 per annum, or occupying houses of £20 rental and over, to be excluded from medical benefit. This rule not to apply to members in benefit on or before December 31st, 1896. 9. No fee for examination will be charged on candidates for admission to medical benefit, but when medical benefit is not provided a fee of 2*s.* 6*d.* will be charged for examination.

This scheme was treated with the greatest contempt by the friendly societies; they seemed to think that there could never be the slightest difficulty in obtaining the services of any number of medical men. It therefore came as a great surprise to these societies when, a month after the public meeting, with but one exception, all their medical officers sent in their resignations. But the one medical officer who did not resign nevertheless acted in concert with his colleagues. It was recognised that he could not possibly afford to give up his clubs, so he was allowed to retain them on condition that he accepted no new members or other clubs at the old rates, and he signed an agreement to this effect. The chief societies existing in Stockport at the time of this struggle were the Foresters, the Rechabites, the Rationals, the Druids, the Shepherds, a very few Oddfellows, and various trade societies. Of course, the medical practitioners held several meetings and among other measures withdrew the ninth clause of the above scheme. Mr. B. W. Housman acted as secretary and signed most of the circulars, with the result that the whole wrath of the clubs was directed against him personally and threats were loudly made to drive him out of the town. This experience suggests the advisability of obtaining collective signatures for collective action. It is comparatively easy to persecute, or at least to make things unpleasant for, one or two practitioners, but nothing can be done against a large body of men. If Mr. B. W. Housman had simply taken the precaution of getting the circulars which he issued countersigned by other members of the medical society he would have avoided considerable loss and annoyance. To meet the resignation of the members of their medical staffs the friendly societies first attempted to import a medical man, but at the last moment the gentleman whose services they imagined that they had secured failed to put in an appearance. There was also a great deal of talk of federating the friendly societies and then of employing a medical man at a fixed salary to attend to all the members. But this was opposed by the more intelligent members, who foresaw that this method was not calculated to ensure satisfactory medical attendance.

In a little while some of the societies came to the conclusion that, instead of launching out on uncertain enterprises, the best and simplest thing to do was to accept the terms which were offered by the medical men who were on strike and which are described in the first eight clauses of the scheme quoted above. The Rationals were amongst the first to yield, as also did several trade societies which had sick funds—such as the Bricksetters, the Ironworkers, the Joiners, and others. In the midst of this struggle, which was thus turning in favour of the medical men, one local

practitioner accepted on the old terms the post of medical officer to a large lodge. He was at once ostracised by all the members of the profession and to this day is considered an outsider. During the first six months that the strike lasted the friendly societies continued their attempts to import medical men and they advertised extensively for that purpose; one medical man did come in response to these appeals, but he only remained in Stockport four days.

As the strike continued for months the friendly societies had the time necessary to make a remarkable discovery which, if it could be confirmed by the experience of other districts, would go a long way towards solving the entire difficulty. It has often been a subject of complaint that profits were accumulated by friendly societies out of the work done by their medical officers and this is undoubtedly the case when an amalgamation of such societies employs a practitioner and pays him a fixed salary. But where the medical officer receives the entire sum subscribed for medical aid instead of a fixed salary the Stockport clubs were taught by experience that it was more advantageous to abandon altogether this phase of their business. In practice it works as follows. A member is slightly indisposed. As he pays a regular subscription for medical attendance it does not cost him anything extra to consult the medical officer of his society, therefore he does not hesitate to seek such advice. The result is that he may obtain a medical certificate. The medical officer has nothing to lose by granting such a certificate as it places him on the safe side. The indisposition may be slight, but it is always safer for the patient to go home and lie up instead of continuing to work. Also the medical officer would compromise his popularity if he was very rigorous in refusing certificates except in cases where the illness was really very serious. Thus a number of certificates were obtained in cases of comparatively slight illnesses when it might have been possible for the member to continue working. No sooner, however, has a member ceased to work than he has the right to claim, not only medical aid, but a weekly sick allowance, and these sick allowances constitute a very serious drain on the funds of the societies. On the other hand, if the society has no medical officer and if the members are therefore obliged to go to a private practitioner to whom they must pay the usual fees and, being only slightly indisposed, are not at all certain of obtaining a certificate they will be careful not to incur unnecessarily such an expense. As a consequence of this state of affairs it was found that there was a considerable reduction in the number of members inscribed on the sick list and therefore entitled to receive the sick allowance. Hence the friendly societies discovered that when their medical officers were on strike they had much less to pay for sick allowance. This threw a totally new light on the subject and several societies have been well satisfied to let matters remain in this condition. Of course, this is equally advantageous to the medical practitioners, for they now receive full fees from members who used to pay them only 2*s.* 6*d.* per annum and were constantly taking up their time when there was nothing serious the matter. Thus it was clearly proved that it pays a friendly society not to give medical aid. The only question is that the medical aid offered constitutes a strong inducement for members to join such societies. At Stockport the members were compelled to go without medical aid because all the medical officers had resigned, and as the members had already invested a large portion of their savings in these societies they would have lost considerably if they failed to continue their membership. But under such circumstances would it be possible to obtain new members? Nevertheless, we have now before us a weighty fact—namely, that when this can be done it is a financial advantage for friendly societies not to give medical aid. If members of friendly societies were all made to pay the usual medical fees there would not be so heavy a drain on the sick funds of those societies. This fact is well worth bearing in mind and should be brought forward in all the controversies which medical men have with these provident institutions.

The question, however, will be asked, What is to become of the workman in cases of prolonged sickness? Even if a workman is earning high wages and has a wife and children who add to the family income he cannot afford to pay a doctor's bill which even at the lowest rates may well exceed £5 or £10. The solution to this problem has also been found at Stockport. Such heavy bills are, as a rule, an exception. There is often a period in the life of a family when all the children are down with measles or scarlet fever or some other serious illness occurs. And, further, this very generally happens when the children are too young to earn anything, when it is all expense and no return, and when school fees have to be reckoned with as well as the medical man's fees. It may well be said that the burden is too great and cannot be met even by the prosperous operative and artizan class. But in Stockport the collector system has been organised on a large scale and by this method the good years are made to pay for the bad. The medical practitioners hand their bills over to the collectors who call every week on the patients and receive small sums of perhaps 6*d.* or a 1*s.* at each visit. The patients pay 2*s.*—some patients as much as 4*s.* or 5*s.*—a month. Thus, instead of receiving a lump sum from comparatively few patients, the medical practitioner receives small sums from a much greater number of patients and in the long run it amounts to much about the same. Indeed, it tends to regularise the medical practitioner's income—he is better able to calculate what his receipts are likely to be. It is true that it costs him 2*s.* 6*d.* for every £1 the collector is able to obtain, but this outlay saves him a great amount of trouble. The debt incurred sometimes takes several years to pay; thus it sometimes happens that when the boys of a workman grow up and go to work at the mills their first earnings go to pay off what still remains due for the measles or other illnesses from which they suffered during their childhood. The collectors have systematised their business and are skilful in following up the debtors when they remove. They have also agreements with other collectors in other districts and are able to transfer debts, so that when the debtor leaves the town altogether he will find that there is another collector to wait upon him in his new abode. Some of these men collect as much as £70 or £80 in a month and are therefore able to live on the commission which they receive. This system acts fairly to all parties. The medical men are well satisfied with it, the collector earns a livelihood, and the workman does not have to give out of his weekly income more than he can fairly well afford. But, on the other hand, if a workman joins a medical society and pays a regular subscription for his children he is apt to do this only during those years when sickness is to be anticipated. Thus, when the children have reached the age when sickness is not so likely to occur he drops out of the society. Therefore the medical officer has a great deal to do and very little pay. With the collecting system, on the contrary, the good years are made to pay for the bad and in the long run the financial difficulty rights itself without loss to the medical attendant or too great a strain for the workman and his family.

Apart from the friendly societies there is at Stockport a provident dispensary organised on a somewhat mistaken philanthropic basis. It was originated by the Church of England and is managed by a lay committee. The members subscribe 1*d.* per week and only one medical officer is employed to attend to them. Some of the members are in moderately good positions and the Stockport Medical Society urged upon this dispensary to enforce a wage-limit. The Managing Committee, however, refused to entertain the proposal. This provident dispensary has some 2000 members. Its medical officer receives a minimum salary and then when all expenses have been paid he further receives a share of whatever balance may remain in hand. The dispensary is supported by clergy of various denominations, so that we have a mixture of piety, philanthropy, and abuse all worked together at the expense of the medical profession. This is a grievance which has to be dealt with and the medical practitioners are now the better able to take this matter in hand as their efforts have so far been rewarded by a large measure of success. About 12 months ago the important society of the Rechabites gave up their struggle against the medical men and undertook to pay 4*s.* 4*d.* instead of 2*s.* 6*d.* per annum, according to the scheme presented by the united profession. The question as to who should now be their medical officer involved an important matter of principle. Before the strike Mr. Housman had been their medical officer and it was necessary that he should not be allowed to lose through his action in the matter. Therefore, no one else consented to accept the position till Mr. Housman signified that he no longer cared to resume this post. With regard to other friendly societies many of them are now quite satisfied to dispense with the services of a medical officer, for, as already explained, they find that

this pays better and of course it suits the medical practitioners, for they have less work and higher remuneration. Besides, many of the better class members of the friendly societies joined for the sake of the general insurance, sick allowances, burial funds, &c., and not for medical aid. These men did not believe in club practice and, though entitled to medical aid, very often preferred to visit a practitioner of their own choice and pay him the usual fees. Thus in Stockport most of the persons concerned are quite satisfied with the present state of affairs and it is not likely that any very great alteration will take place.

Still, the cry was raised that the poor working-man could not get medicine; that though the above arguments applied to the majority of the population there remained a section which was too poor to pay medical fees, even if the amount was spread over a great number of years by the collector system. Recognising that these objections were quite legitimate the medical practitioners of Stockport determined that they would themselves establish a provident institution that should provide all necessary medical aid in exchange for the regular payment of 1*d*. per week. Consequently the Stockport Provident Medical Guild was inaugurated in September, 1896, to be managed exclusively by the members of the medical profession and they alone should decide who were eligible for membership. Any registered medical practitioner can become a "medical member" of this Guild if he guarantees at least one guinea towards the funds, but he need not take *active* part in carrying out the objects of the Guild. In this manner the support of several practitioners has been secured who are not themselves desirous of attending medically on the subscribing or benefit members of the Guild. The latter must pay a registration fee of 6*d*. or 1*s*. for a family of two or more persons. These fees go to the general fund of the Guild. The weekly subscription between the ages of from one to 60 years is fixed at 1*d*. Families whose joint weekly income does not exceed 25*s*. pay 1*d*. for each person up to the maximum of 6*d*. per week unless the children are more than 14 years old. Thus a family of eight persons would only pay 6*d*., but when one of the children reached the age of 14 years they would have to pay 7*d*. Children under one year of age are not included. Aged persons over 60 years pay an entrance fee of 5*s*. which goes to the medical man in attendance. They also must pay the ordinary registration fee which is devoted to the funds of the Guild. The committee reserve the right to exclude any member whose financial circumstances shall have so improved as to place him beyond the wage-limit. Fines of 2*d*. on single members and 3*d*. on families are imposed on all who are in arrears of payment and they cease to be members if they are three months in arrears, but may rejoin as new members and have consequently again to pay entrance fees. The wage-limit for single persons is somewhat high—namely, 25*s*.—and families whose joint income is above 25*s*. may apply. Their position will be taken into consideration by the committee and the application will be accepted or rejected as the circumstances may warrant. But care is taken not to allow any medical officer to incur the odium of rejecting an application; the decision is given by the committee and thus the individual practitioner concerned cannot be held responsible. The benefit members choose their own medical man and may change with the consent of the committee. There are also the usual rules with regard to attendance at the surgery at fixed hours, &c. Sick club certificates are charged 1*s*. for the first and subsequent certificates for the same illness are free. This fee is retained by the medical attendant. The subscription to the Guild does not include the treatment of fractures, dislocations, or severe injuries, with the exception of "first aid," nor does it include venereal diseases, the administration of anæsthetics, operations (beyond the opening of superficial abscesses), vaccinations, confinements, miscarriages, &c. For these and for children under one year special terms can be arranged with the medical attendant. The collector employed by the Guild receives a commission of 1*d*. in the 1*s*. and half the entrance fees. Further, the collector is paid rent for the hire of his rooms in which the quarterly meetings of the Guild are held. At these quarterly meetings new applications are taken into consideration and the applicant has to declare that he knows the rules and will observe them. Pending the quarterly meetings the applicant goes to see the medical officer whom he has selected, who questions him but can only accept him as a member provisionally.

It is not a little remarkable that though loud protestations were made as to the necessity of an institution of this sort to meet the poverty of a large minority of the population there are, nevertheless, only about 150 benefit members of the Stockport Provident Medical Guild. These for the most part are single women working in the mills and earning from 10*s*. to 14*s*. a week. Of course, it must be borne in mind that the Guild has to compete against the Provident Dispensary and such clubs or benefit societies as still give medical aid. Nevertheless, after all that had been said it was natural to expect a larger number of members. The fact that there were so few members would seem to indicate that the amount of poverty prevalent has been exaggerated. In any case the medical profession has now organised full and adequate machinery to meet such poverty and no one, whatever his means, need be without suitable medical attendance in times of sickness. There is consequently, on the one hand, sufficient means for giving medical aid and at the same time for preventing abuse. But there remains the Provident Dispensary which does not prevent abuse because it is managed by a committee composed of clergymen and others who are still blind to the importance of this question.

As another feature peculiar to Stockport it should be noted that the Stockport Medical Society is practically the medical union. Generally the latter is a separate society and the offspring of the former. As a rule medical societies meet only for social purposes and for scientific discussions, but the Stockport Medical Society takes active interest in all ethical and economical subjects and therefore it has not been necessary to form a separate organisation to deal with these latter topics. Consequently there are but two organisations in Stockport—the medical society, which might also be called the medical union, inasmuch as it is a fighting body which deals with economic questions; and its offshoot, the Provident Medical Guild, which provides medical aid to those who come within the range limit. With the exception of the one gentleman mentioned above these institutions are supported by all the local practitioners. The greatest unanimity and concord prevail. Much has been done in creating friendly relations between all the members of the profession. Formerly, if a local practitioner absented himself he was likely to lose some of his patients, but now he can go away without running any such risk. The battle of the clubs has united the profession. The spirit of solidarity has taken the place of the spirit of competition. Harmony reigns where warfare formerly prevailed. The local practitioners have learnt in theory and demonstrated in practice that mutual help is more fruitful and beneficent than the old time-worn rivalries.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Analysts Differ.

DIFFERENCES among analysts as to milk and butter are of everyday occurrence and arise in most cases from the absence of a recognised standard of comparison, but we do not so often hear of bread becoming converted into an apple of discord. On Sept. 7th a Manchester provision dealer was summoned for selling flour "containing ingredients injurious to health." The case was heard some time ago and on the advice of Mr. Yates, Q.C., some of the flour was sent to Somerset House for analysis. It seems that an inspector purchased a pound of self-raising flour on May 31st for analysis, a portion (it is not stated how much) being sent to Mr. Colingwood Williams, one of the county analysts, who certified that it contained 170 grains of alum and 140 grains of bicarbonate of soda. At the hearing of the case it was stated that some of the same flour had been analysed by Mr. William Thomson who certified that it contained no alum at all, which result was confirmed by the Somerset House analyst. Further proof of purity being desired it was resolved to send the remainder of the flour still in Mr. Colingwood Williams's possession to Somerset House. This was on July 23rd when the case was last before the court. An adjournment took place so as to get the certificate of the Somerset House authorities, which proved to be in direct conflict with that of the county authorities. It was stated that self-raising flour "was a substance with a baking-powder added," and possibly in this case it might have been put at the top or bottom of the bag

and that Mr. Williams had got baking-powder alone. The prosecution said that there was evidence in court in corroboration of the certificate of the county analyst, but as there was a conflict of expert evidence the summons would, with the permission of the magistrates, be withdrawn. For the defence it was urged that the prosecution had been founded on an error and that the defendant was entitled to an absolute acquittal and reasonable costs as she had been put to great expense. Mr. Yates said that the case was of considerable importance "for more reasons than one." It had been alleged that the self-raising flour was adulterated with alum and bicarbonate of soda, but it had been shown "that there was a mistake on the part of the county analyst and he was of opinion that the matter really arose to a great extent from the fact that matters sent to the county analyst were often submitted to assistants. There probably the whole mischief arose, but it was impossible to give that supervision which was necessary in a case of this description." Does the latter clause of this sentence mean that it is impossible for county analysts to give the supervision necessary in such cases? If this view comes to be generally taken these officers will not be raised—I was almost writing "self-raised"—in public estimation and it will be important that they should have assistants capable of not finding alum where it does not exist. The defendant was allowed 10 guineas costs. The detection of adulteration is important for the protection of the public, but it is only fair that provision dealers should be protected against errors which may prove their ruin.

Precautions against Plague.

Now that Manchester is a port precautions have to be taken against the danger to which ports are specially liable, and at the last meeting of the Port Sanitary Authority the medical officer (Dr. Crocker) reported that during the month visits of inspection had been made to 127 vessels, of which 109 were British. In 27 British ships, two Norwegian, and one Danish defective sanitary conditions were found. In consequence of a letter from the Local Government Board expressing the opinion that special attention should be given to any vessels coming from Oporto the medical officer added that he had written to the Ship Canal authorities as to their informing him of any ships coming from India, Egypt, Spain, or Portugal, but received the answer "that the company was not in a position to render this assistance." Now, therefore, the port sanitary inspector challenges every vessel entering the canal at Eastham. "In addition to a leaflet on the possibility of plague being introduced by rats a leaflet was given to the captain of every foreign ship in the port and to ship-owners and agents describing the nature of the disease and sources by which it could be 'caught.'" We in England are now so near to all the world and all the world so near to us that the more earnest study and teaching of "tropical diseases" has come none too soon.

The Water-supply.

It was stated on August 31st that some relief to the waterworks department of the Manchester Corporation had been given by recent rains and that the reservoirs held a quantity sufficient for 61 days. Since then, however, the supply has undergone considerable reduction and on Sept. 14th there was said to be water enough for 51 days only and that unless there was a great change it would be necessary to think of curtailing the supply, probably, as on a former occasion, by cutting off the water from 8 P.M. to 5 A.M. Thirlmere is considerably below the normal level and the reservoirs in the Longdendale Valley are almost alarmingly low. On Sept. 11th there was a rainfall in Longdendale of a tenth of an inch, which does not seem a large quantity, and though it means about ten tons to the acre it is doubtful if the thirsty ground would allow much of it to get into the reservoirs. Some of the neighbouring towns have suffered inconvenience, to say the least of it, from the prolonged drought. A discussion on the matter took place at the meeting of the Ashton-under-Lyne Town Council on Sept. 13th. There had been complaints of the quality of the water and an alderman said that "the reservoirs were going down considerably and under the circumstances the water could not be expected to be free from dirt." The barometers are anxiously watched, but, as this gentleman said, "they gave no indications of rain, for his had gone up the sixteenth of an inch from the previous day." When the reservoirs get low the quality of the water suffers from an increase in the proportion of the animal and vegetable matter. Some years ago there were great complaints of the fishy taste of the water from the Longdendale Valley and it was found that water-snails had greatly increased in number. On the advice of Mr. Estcourt, the chemist to the corporation, who is an angler as well as a chemist, trout were introduced and in a short time nothing more was heard of the fishy taste. I do not know if there are fish in the Ashton reservoirs, but it is worth while to bear in mind Mr. Estcourt's simple and successful remedy for what seemed at the time a great difficulty. It is stated in the *Manchester Courier* that the heavy rains of Saturday and Sunday last have not added as much to the supply in Longdendale as was anticipated, as "the parched ground has drunk in an immense portion of the downfall," so that little more than a day's supply has been added. The Thirlmere lake is said to be steadily rising.

Sept. 19th.

LIVERPOOL.

(FROM A CORRESPONDENT.)

The Spread of Tuberculosis by Milk.

THE City Council have resolved that there should be included in the next application to Parliament powers for protecting the public against the spread of disease by the sale within the city of the milk of cows with diseased or indurated udders and for taking samples of milk within the city for the purpose of bacteriological examination, and for the entry of the medical officer of the city or a specially authorised inspector into any byres or cowsheds or other places within or beyond the city where cows are kept from which milk is sent for sale within the city, to examine the cows therein for the purpose of ascertaining whether such cows suffer from diseased or indurated udders, and for preventing the milk of cows so affected being sent for sale within the city.

The Joint Parochial Hospital for Tuberculosis.

In THE LANCET of Sept. 9th the difficulties in connexion with the establishment of a joint parochial hospital for tuberculosis were alluded to and the terms of the notice of motion by a member of the Select Vestry to shelve the whole question were given in full. The subject was again discussed at the last meeting of the Select Vestry with the result that the resolution of July 11th for the coöperation of the three boards of guardians for the erection of a joint parochial hospital for tuberculosis remains. This end was obtained through the motion of the previous question, which was carried by 22 votes to 14. There is no doubt that the erection of the sanatorium by the Liverpool Hospital for Consumption has had an influence on the minds of an important section of the Select Vestry in the direction of awaiting the results of treatment at that institution. In the event of success they would then be willing to consider the wisdom of building an institution on their own account.

The Seaforth Overcrowding Case.

At the county magistrates' court recently a painter residing at Seaforth was summoned by the National Society for the Prevention of Cruelty to Children for neglecting his children. The case was of importance from the fact that it was the first in which the society had prosecuted under similar circumstances. It was really a question of overcrowding. The children were well fed and clothed. The defendant, who earned good wages, lived in a four-roomed house, two of the rooms being used as sleeping apartments. In one of the rooms, which was 11 ft. by 10 ft. 10 in., were two beds, in one of which slept at the date in question the defendant, his wife, and four children. In the other bed in the same room slept the defendant's sister and a female relative, making eight people in one room. In the second room slept the defendant's father and brother, making 10 persons in two rooms. One of the children, a twin, had died and an inquest was held. The prosecution pointed out the serious effects of the overcrowding, because there were in the city a great number of cases of suffocation of infants under one year old from this cause. They did not ask the bench to inflict imprisonment or even a fine upon the defendant, but merely to bind him over. They wanted the decision of the bench that overcrowding was an offence under the Act in order that the public might know that the society intended to repress it with a firm hand. Mr. German of Waterloo said that the air space in the room was altogether inadequate. He knew the defendant very well and did not suggest that

he had ill-treated his children; on the other hand, he was a most respectable man. He had no doubt that he would remedy the matter. The children were well fed and kindly treated. The bench refused to bind the defendant over and adjourned the case for 28 days to give him an opportunity of altering the state of things.

The Liverpool Corporation Hospitals.

The annual inspection of the hospitals under the control of the corporation by the members of the Hospitals Committee of the City Council took place on Sept. 12th. The committee commenced the inspection by a visit to Fazakerley where the site for the new hospital was inspected. The Harbreck House estate comprises 118 acres and has been purchased by the corporation for £40,000. Here provision will be made for an infectious hospital and two special small-pox pavilions with accommodation for 40 beds. The committee next inspected the port sanitary offices at the pierhead and afterwards proceeded to Grafton-street. The Grafton-street Hospital is a model establishment. Last year 754 cases, principally of scarlet fever, were dealt with. The next hospital visited by the committee was the Parkhill establishment, the present receptacle for small-pox patients. Here luncheon was served, after which congratulatory speeches were made by several members of the committee. Dr. Hope, the medical officer of health, in the course of his remarks alluded to the benefits of hospital provision for infectious diseases and pointed out that whereas 15 years ago deaths from typhus fever each year amounted to 500 they had now fallen to 26. With regard to scarlet fever the mortality had fallen in the same ratio as hospital accommodation had been provided. Measles and whooping-cough called loudly for hospital accommodation as did to a less extent diphtheria. It was a striking fact that while the mortality from infectious diseases for which they had provided accommodation had diminished in a remarkable way there had been no diminution in the diseases of measles, whooping-cough, and diphtheria. He strongly advocated the extension of hospital accommodation in the city, having been obliged to refuse admission this year to 211 patients. The City Hospital East, at Mill-lane, was subsequently visited as was that in Netherfield-road North. On the whole the committee had every reason to be satisfied with the brightness, cleanliness, and the homeliness of the institutions visited.

The Re-housing of the Liverpool Poor.

The Insanitary Property Committee of the City Council have had their attention drawn by the Local Government Board to the fact of the displacement of 16,892 persons in consequence of the demolition of insanitary property. The Board are of opinion that substituted accommodation should be provided for not less than one-half of this number, or 8446 persons. This will necessitate the provision of accommodation for a further number of 2571 persons. With the sites in their possession and the early acquisition of new ones the committee will shortly be able to build the extra accommodation suggested by the Local Government Board.

Sept. 19th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Health of Edinburgh.

THE mortality in the city of Edinburgh in the month of August, as shown by Sir Henry Littlejohn's report, reached the average of 18·34 per 1000. The average in the last five years in that month was 15·05 per 1000. The extra mortality was almost entirely confined to infants and was due to an unusual prevalence of infantile diarrhœa.

Proposed Fever Hospital for Stirling and District.

At a meeting of the Stirling Local Authority on Sept. 12th a report was presented by the Public Health Committee regarding the erection of a new fever hospital for Stirling and adjoining burghs. A conference had been held between representatives from Stirling, Bridge-of-Allan, Dunblane, and Doune. It was expected that the hospital would cost £7000, and it was proposed that the cost should be assessed on the basis of property and valuation. By this arrangement the cost would be divided as follows: Stirling, £5002; Bridge-of-Allan, £1097; Dunblane, £673; and Doune, £225. The permanent charges would be paid in the same proportion. The local authority approved of the arrangement.

Queen Victoria's Jubilee Institute for Nurses.

The County Council of Lanarkshire, with the approval of the Secretary for Scotland, has contributed £50 out of the equivalent grant for the purpose of assisting in the training of nurses by the Scottish branch of the Queen Victoria's Jubilee Institute for Nurses as a scheme of public utility in terms of the Education and Local Taxation Account (Scotland) Act, 1892. There are 19 nurses at work in the county who have been trained by the institute without any expense to the localities in which they are stationed.

Handsome Bequests to Glasgow Institutions.

By the will of the late James Brown Thomson a sum of nearly £80,000 has been bequeathed to the educational and charitable institutions of the city. Of this £10,000 were bequeathed for certain special purposes and the distribution of the residue of the estate was left to the discretion of the trustees. After considering numerous applications these gentlemen have now completed their task. Among the grants thus authorised are the following: the University of Glasgow, £10,000; the Glasgow Royal Infirmary, £6000; the Western Infirmary, £4500; the Victoria Infirmary, £3000; the Royal Hospital for Sick Children, £2000; the West of Scotland Technical College, £2000; the Glasgow Eye Infirmary, the Glasgow Samaritan Hospital for Women, the Glasgow Lock Hospital, and the Glasgow Maternity Hospital, each £1000; and St. Mungo's College, Glasgow, £500. A further addition to the funds of the infirmaries is provided by the will of the late Mr. W. W. Pollok of Rhindmuir. The trustees of this estate have intimated the following bequests: to the Glasgow Royal Infirmary and to the Victoria Infirmary, each £10,000; to the Western Infirmary and the Blind Asylum, each £5000; and to the Edinburgh Royal Infirmary, £10,000.

University of Glasgow.

The number of candidates who have sent in applications for the chair of Natural Philosophy is nine, of whom no less than five are connected with the University of Cambridge, three of these being demonstrators in the Cavendish Laboratory. The vacant chair of History has attracted 12 candidates. It is anticipated that the appointments, the patronage of which is in the hands of the University Court, will be made early in October. Mr. R. M. Mitchell has been elected by the Town Council to serve as an assessor on the University Court, vice Dr. Colquhoun, resigned.

Glasgow Lunacy District Board.

The memorial stone of a new home for imbecile children was laid on Sept. 14th by Mr. R. Wilson Bruce, convener of the committee. The home is somewhat of a new departure in asylum administration as it is intended to meet the position of a class who, whilst not suitable for the ordinary training institutions, are yet not hopelessly imbecile. The cottage will accommodate 33 children and it is provided with playsheds and other special features calculated to promote its main purpose.

Victoria Infirmary, Glasgow.

Plans for the extension of the infirmary by the erection of additional wards have recently been approved by the Dean of Guild Court and the governors are therefore in a position to proceed with the building scheme.

Medical Appointments.

Some months ago the Corporation of Glasgow decided to enlarge the staff of the health department by the appointment of a bacteriologist who should coöperate with the medical officer of health and should generally undertake bacteriological investigations for public sanitary purposes. The advertisement of the vacancy was followed by a number of applications and by an energetic canvass of the city fathers. The Health Committee selected two names for submission to the corporation—viz., Dr. R. M. Buchanan and Mr. David M'Crorie. Dr. Buchanan is a director of the West of Scotland Research Laboratory and was formerly pathological assistant to the late Professor Coats; Mr. M'Crorie is bacteriologist and assistant pathologist at the Royal Infirmary. The salary attached to the new position is £350 per annum. At the meeting of the corporation on Sept. 18th Dr. Buchanan was appointed by 29 to 27 votes. There are just now quite a number of vacancies in the West of Scotland for junior members of the profession. Resident medical officers are wanted at the Glasgow Eye Infirmary, Greenock Poorhouse and Asylum, Govan Fever Hospital, and Govan District Asylum. There are also vacancies for a surgeon and a lecturer on dental mechanics

in the Glasgow Dental Hospital. The directors of the Royal Hospital for Sick Children have made the following appointments: Dr. Alexander M. Lindsay to be house surgeon; and Dr. James R. Chalmers to be dispensary assistant surgeon.

University of St. Andrews.

The committee appointed to consider the necessary steps to be taken with regard to the erection and equipment of a building suitable for the accommodation of the Conjoint Medical School at Dundee has reported in favour of the purchase of a site behind the present College. The University Court have, however, postponed the consideration of this proposal. It has been decided that Professor Marshall, who is attached to the College at Dundee, shall in future give a qualifying course in practical materia medica at St. Andrews during each summer session. The following appointments are intimated: Dr. John Cameron to be assistant to the lecturer on anatomy; Mr. R. C. Punnett to be assistant to the professor of natural history; and Dr. J. J. Taylor to be assistant to the professor of materia medica.

Lunacy in Scotland.

The forty-first annual report of the General Board of Commissioners shows that on Jan. 1st, 1899, the proportion of private lunatics in establishments was 48 per 100,000 of the population, which is the same as that of last year; that the proportion of pauper lunatics in establishments per 100,000 of the population was 238, the highest figures yet recorded; and that the proportion of pauper lunatics in private dwellings relative to the same standard was 63, showing no change from the previous year. The proportion of all pauper lunatics in relation to the population shows an almost steady increase since 1858. The figures attained at the beginning of this year—viz., 301—are the highest yet recorded, the next highest being 293, which was the proportion for the previous year.

Extension of Aberdeen City Hospital.

The latest addition to the Corporation City Hospital (for infectious diseases) at Cuningharhills, Aberdeen, is now receiving the finishing touches and will be opened in a week or two. The new block is a two-storey one of elegant design, of light grey granite with dressings of white granite, and is situated to the north of the former administrative block, with which it is connected, the main front being directly opposite to the entrance in Urquhart-road, while the west elevation is also very striking, this having in fact been the nicest-looking block yet erected at the hospital, which is on the separate pavilion system. On the ground floor are six bedrooms for ward maids and laundry maids, servants' dining-hall, and reception and despatch ward for patients, with bath and lavatory accommodation. On the upper floor are 14 bedrooms for sisters and nurses, with bath and lavatory conveniences. There is a central tower, 45 feet high from the ground level, which will be fitted with a single-dial public clock. The building will be lighted by gas and warmed by steam. The furniture is of American ash. A new greenhouse (heated by the steam heater) has been built near the entrance gate, and a capital croquet green and a bowling-green for convalescents have been constructed and the grounds have been otherwise pleasantly laid out by Mr. R. Walker, chief gardener to Victoria Park. The original reception block (concrete) has also been extended in brick plastered with cement, and advantage has been taken of the small number of patients of late to floor two of the wards with wood. Mr. Rust, the city architect, designed the extensions, which cost upwards of £6000, bringing the total capital expenditure up to £42,000, and Mr. John Ogilvie has acted as inspector of works for the Town Council.

Sept. 19th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Infectious Disease in Dublin.

THE death-rate in Dublin is quite unusually high just now owing to the prevalence of measles in epidemic form, of a dangerous form of diarrhœa, and of the usual autumnal typhoid fever. As regards the first, measles is notifiable in Dublin under the Infectious Diseases Notification Act and it is said that the fact will be useful in preventing its spread; the diarrhœa which prevails will probably be favourably affected by the recent change from very hot to cold and windy weather. In reference to typhoid fever the outlook seems less hopeful. It is stated that there are 14 men from the constabulary depot under treatment in hospital, two having already died. The men of the Dublin metropolitan police are also to some extent affected. The usual difficulty appears in connexion with the deficient accommodation in Dublin for infectious disease. A conference took place on Sept. 19th between the Public Health Committee of the corporation and the representatives of the sanitary authorities of the county in reference to the project of establishing hospital accommodation for infectious diseases and, if possible, providing a convalescent home as well. The Lord Mayor presided and the attendance of representatives was large. Sir Charles Cameron explained the objects of the conference and remarked that there were only two fever hospitals in the city—Cork-street Hospital and the Hardwicke Hospital—both of which were utterly unable to provide sufficient accommodation if an outbreak were now to occur.

Army Medical Department in Dublin.

Major Ulick Daly, who has had charge of the troops stationed at the Linenhall barracks for the last seven years, has been ordered to South Africa for duty. Major Daly had made many friends for himself in Dublin.

St. Vincent's Hospital, Dublin.

Cards of invitation have just been issued by the medical board of St. Vincent's Hospital for the address introductory to the medical session to be delivered on Oct. 3rd by Mr. R. F. Tobin, one of the surgeons to the hospital.

New Roman Catholic School of Medicine in Belfast.

The secretaries of the Royal University of Ireland have notified to the medical staff of the Mater Infirmorum Hospital, Belfast, that their institution has been added to the list of those from which the University receives certificates for degrees in medicine. During the year just closed 6050 patients have been dealt with at this hospital and a nursing school was inaugurated at the beginning of the year. It is hoped that the western pavilion and children's wards will be completed and equipped and the hospital formally opened in the beginning of 1900.

Queen's College, Belfast.

There is now only one candidate, Dr. Lindsay, for the Professorship of Medicine at the College, as Surgeon-Lieutenant-Colonel Moorhead, M.D. R.U.I., has retired from the contest. Dr. Lindsay's widely recognised claims for the chair will make his appointment most popular.

New Appointments at the Royal Hospital, Belfast.

Dr. William Calwell who for the past four years has been assistant physician of the Royal Hospital, Belfast, has been advanced to the office of physician in succession to the late Dr. Cuming. Dr. Calwell has had a sound training for the position, for in addition to his experience as physician to one of the children's hospitals he has been medical registrar to the Royal Hospital, and it was after doing excellent work in this office that he first became assistant physician and so joined the medical staff. He has for five years been medical officer to the Throne Hospital for Consumption and when Dr. Cuming's health began to fail he did all his work in the wards of the Royal Hospital for the greater part of the past two years. His appointment will tend to strengthen the teaching element of the school. Dr. McKisack succeeds Dr. Calwell as assistant physician. For the past four years he has been medical registrar and he has also been on the staff of the Ulster Children's Hospital.

Sept. 19th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Ambulance Vehicles.

THE Prefect of the Seine has issued an order fixing the charges to be made for the conveyance of patients both within Paris and outside. Several scales of charges have been laid down by this order. For the *ambulances municipales* the rates are as follows:—1. Conveyance at the request of private individuals and non-contributory *communes* within the limits of Paris, 5 francs; from Paris to the Department of the Seine and *vice versâ*, first zone 8 francs, second zone 12 francs; beyond the Department of

the Seine 15 francs a day, or any part of a day, for the vehicle only. 2. Conveyance at the request of the *communes*, the Assistance Publique, and the prefect of police: from Paris to the Department of the Seine and *vice versâ*, first zone 6 francs, second zone 10 francs; beyond the Department of the Seine 10 francs a day or any part of a day for the vehicle only. For the *ambulances urbaines* the charges are as follows:—1. Conveyance at the request of private individuals and non-contributory *communes*: in Paris 5 francs for accidents and 10 francs for other cases; from Paris to the Department of the Seine and *vice versâ*, first zone 10 francs, second zone 25 francs; beyond the Department of the Seine 35 francs a day or any part of a day for the vehicle only. 2. Conveyance at the request of contributory *communes*, the Assistance Publique, and the prefect of police: from Paris to the Department of the Seine, first zone 10 francs, second zone 15 francs; beyond the Department 20 francs a day or any part of a day for the vehicle only.

The Boulogne Congress.

The twenty-eighth Congress of the French Association for the Advancement of Science met at Boulogne on Sept. 14th, Professor Brouardel, Dean of the Faculty of Medicine, being President. The President of the Medical Section is Professor Bouchard. According to a decision arrived at during the last meeting of the Congress, which was held at Nantes, a new section—namely, that of Medical Electricity—was added to the "proceedings" this year, Professor Bergonié being the president. This year's meeting of the Congress is of special interest owing to the visit paid to the British Association during the meeting at Dover and to the unveiling of a statue of Duchenne at Boulogne after a brilliant speech by Professor Brissaud.

Medical Men at the Rennes Trial.

Many medical men were connected with the proceedings at Rennes either as witnesses or spectators. Among the former were Dr. Peyrot, professor at the Faculty and surgeon to the Lariboisière Hospital, and Dr. A. Weill, physician to the Rothschild Hospital, but their evidence was of no great importance. Other medical men followed the evidence with unflagging interest, among whom were Professor Brissaud, physician to the Saint Antoine Hospital; Dr. Reclus, surgeon to the hospitals and professor of the Faculty; Dr. Widal, physician to the hospitals and professor of the Faculty (all three of whom gave unremitting attention to Maître Labori after his injury); Professor Poncet of Lyons; and Dr. Pozzi, senator and member of the Academy of Medicine. It should be remembered, too, that the ex-deputy M. Clemenceau, who initiated the revision campaign as editor of the *Aurore*, is a doctor of medicine. Previously to the year 1870 he practised at Montmartre, of which district he was mayor during the war.

Fire at the Faculty of Medicine.

On Sept. 15th, at 5 P.M., a violent explosion took place at the Faculty of Medicine in the cellars underneath the porter's lodge. The floor above is occupied by the private apartments of the dean and the secretary. Close by is the library which is rich in rare works, especially of ancient authors. Directly after the explosion long tongues of flame were seen through the pavement lights of the cellars, other fainter explosions were felt under the roadway of the Boulevard Saint Germain, and, to the great alarm of passers-by, a flame leapt out of the earth at the foot of a tree on the Boulevard. The fire brigade arrived almost at the same instant, but by the direction of M. Girard, the head of the Municipal Laboratory, they forebore to pump any water into the burning basement, while workmen hastily tore up the street over the gas main and cut off the supply. During this time the fire made rapid progress, for the cellars were full of wood and coal. Directly, however, the gas was cut off the fire brigade flooded the cellars with water and rapidly put the fire out. The damage done was unimportant, but it was only by the greatest promptitude that the destruction of the library was averted. Inquiry showed that the origin of the escape was due to a workman having driven his pickaxe through a pipe some days ago while laying down a pneumatic tube under the roadway. The gas then travelled along the track of the supply pipes of the building into the cellars when, coming in contact with a pilot light which was kept constantly burning, an explosion took place.

Notes on News.

The Conseil d'État acting during the recess of the Chambers has voted a credit of 300,000 francs to organise a proper measure of defence against the possible invasion of France by the plague. The Committee of the Board of Health met on Sept. 11th to discuss the new measures for protection which this vote made it possible to take and which completes the decree passed on June 11th.

Dr. Jules Simon, formerly physician to the Children's Hospital, is just dead. He left very few writings but had a great reputation as a physician for diseases of children.

Sept. 19th.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

The Cliniques of Zurich.

THE university term commencing in October offers good opportunity for clinical study. The medical wards under Professor Eichhorst, whose works on General Pathology and Treatment and on Methods of Physical Examination are well known, have 191 beds not counting the small-pox hospital which is generally empty. A special building fitted for hydropathic treatment is about to be erected in connexion with the medical wards. The surgical wards under Professor Krönlein and Professor Schlatter contain 175 beds. The former, of the Langenbeck school, has done good work on the subject of intracranial hæmorrhages and trephining, and his pupil, Professor Schlatter, has of late come quite to the front (vide Annus Medicus 1898, THE LANCET, Dec. 31st, 1898). The Ophthalmic Clinique, newly erected some years ago with 61 beds, is under the direction of Professor Haab, whose writings are familiar to English medical students. The Obstetric Hospital has 86 beds available for clinical teaching and is in charge of Professor Wyder. The Children's Hospital, under Professor Oscar Wyss and Dr. von Muralt, has 66 beds and is about to be enlarged by the building of another wing to accommodate the same number of patients. Thus there are over 600 beds available for clinical teaching and the medical students of 1900, who will number nearly 400, have every chance of doing good work. These four hospitals are well situated in their own extensive grounds at an altitude of 1400 feet above sea-level. They are almost entirely supported by the Canton of Zurich, voluntary contributions being small and insignificant in comparison to the large yearly budget. Patients pay from 4*d.* to 7*d.* a day, the parishes being liable for the amount. If they have small incomes they pay from 10*d.* to 1*s.* 3*d.* a day and there are private wards for paying patients besides in which the sum of from 5*s.* to 6*s.* a day covers all expenses. Most of the private patients for whom a stay in a hospital is desirable, however, go to one of the four well-appointed and well-conducted private hospitals in the suburbs of the town.

Typhoid Fever and the Widal Reaction.

Dr. Naegeli, assistant physician at Professor Sahli's clinique at Bern, has published an interesting account of a typhoid fever epidemic which broke out in a pauper asylum of the canton of Bern. Of the 45 inmates 30 received hospital treatment. The Widal reaction and the microscopic and numerical examination of the different blood-cells proved that 12 other inmates who had suffered only from slight symptoms, such as headache, slight fever, and diarrhœa, and were confined to bed either not at all or only for a few days must have had genuine typhoid fever in an abortive form. The infection could be traced to the man who milked the cows of the establishment who, as it was afterwards ascertained, suffered from night sweats, bad dreams, and continuous diarrhœa for several weeks and completely lost his appetite, but who never discontinued his occupation for a single day. A milk infection explains the sudden onset of the epidemic, there being only one other case in the adjoining villages, one of which had the same water-supply. Altogether, typhoid fever could be diagnosed in 42 out of 45 inmates—a quite unusually high percentage pointing to the frequent occurrence of abortive forms of this fever. The Widal reaction secures the diagnosis of typhoid fever even months after the patient has quite recovered from his slight symptoms.

Zurich, Sept. 16th.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The Sterilisation of Drinking-water.

HYGIENE is on the eve of discovering an agent by which the sterilisation of drinking-water may be effected thoroughly, quickly, and economically. The tincture of iodine has been recommended and certainly succeeds when the bulk of water is not great; and good results have been obtained in the well-known establishment at Lille for "the industrial sterilisation of drinking-water with ozone." The *Rivista d'Igiene* of Turin, however, has just indicated a "more excellent way" than either of these, to wit, "the sterilisation of water by means of the peroxide of chlorine," which, it says, has already obtained a unanimous vote in its favour from the Consultative Committee of Public Hygiene in France. Peroxide of chlorine is a powerful and energetic oxidant, while its action as a bactericide is such that less than three grammes are sufficient to sterilise completely one cubic metre of water—even to destroy the "spora carbonchiosa." "This new Bergé process," according to the *Rivista*, "is very economical, the sterilisation of a cubic mètre of water costing less than half a centime." Put to the test at Ostend and at Middelkerke it has yielded quite satisfactory results. One objection, it is true, has been made to it: its action is alleged to be efficacious only in the case of "drinking-water not very impure." Further experiment must give the reply to this; meanwhile, Professor Henri Bergé (lecturer on Chemical Technology at the Brussels Polytechnic School) and M. Albert Bergé have succeeded in eliminating all danger of explosion in the preparation of peroxide of chlorine, which they obtain by treating at about 107° C. chlorate of potash with sulphuric acid. Moreover, in the Bergé process the water after having been treated with peroxide of chlorine must be passed over coke which detains whatever trace of the oxide has remained in it. Every possible source of mischief is thus eliminated and, as the *Rivista* believes (while not accepting the process as free from all objection), we are now in presence of a sterilising agent which promises what public hygiene has long desiderated—a perfectly pure, innocuous drinking-water.

Precautions against the Plague.

The Italian Government through its Board of Public Health is taking active measures to prevent the introduction of pestis bubonica into the kingdom. It has delegated Dr. Santoliquido to establish at Modane and Ventimiglia two "stazioni di osservazione" specially equipped to stop at these frontier stations whatever arrivals, personal or material, seem likely to convey the disease. Dr. Santoliquido, I may add, is a public health officer eminently fitted for the task, having represented the Italian Government on other occasions when prophylactic medicine was "to the front," notably at the congress lately held at Brussels for the protection of communities against syphilitic maladies and their *sequelæ*.

The Tourist Season and Sanitation at the Frontier.

True to immemorial tradition the swallows on Sept. 8th (the Feast of the Nativity of Our Lady) winged their way southward from the Swiss side of the watershed and already the Alta Italia is entertaining the advanced guard of the "tourist legions" ere long to distribute themselves over Central and Southern Italy. The health of the kingdom as a whole is officially declared and statistically proved to be "ottima" and the sanitary authorities are doing their best to keep it so, particularly at the frontier. Hygienic precautions, indeed, are extended from such border-termini as Ventimiglia, Modane, Chiasso, and Ala to the seaports, and now I am informed that the Ministry of the Interior "has augmented all the prophylactic means at the disposal of the maritime stations, besides ordering in various parts of the kingdom the storage on an ample scale of all disinfecting *matériel* so as to admit of its prompt and adequate distribution wherever or whenever it may be required." On the Island of Pianosa (the Planasia of antiquity), in the Tuscan archipelago, there is now in active operation a Government laboratory for the preparation of the Haffkine "vaccine," or a modified form of it; nay, even before the establishment of this laboratory, the Minister of the Interior (General Pelloux, who is also Premier) had already stored in the island other "sieri vaccini" supplied from well-accredited institutes. It will be fortunate, indeed, if his prophylaxis will not, from its omnipresent vigilance, prove sometimes vexatious, official surveillance, under his inspiration, being well-nigh morbidly on the alert for "casi sospetti" (suspected cases). For example, the Direzione Generale di Sanità, having telegraphed to the island station of Asinara for further particulars as to a couple of "casi sospetti" on board the steamship *San Gottardo*, has just received in reply that "the two suspected individuals were isolated immediately, but that their ailment, after due examination, turns out not to be plague." Rather an inconvenience for the said individuals, who are, however, supposed to be comforted, if not compensated, by the assurance that "the measures taken were quite necessary in order that the contagion, whatever its form, might not be diffused."

Sept. 18th.

Obituary.

SAMUEL PUNNETT BUDD, M.R.C.S. ENG., L.S.A.

THE death took place on Sept. 11th, at his residence, 6, Gay-street, Bath, of Mr. Samuel Punnett Budd, a well-known medical practitioner of that city, where he had practised for the last 30 years. Mr. Budd was a son of the late Dr. Samuel Budd of Exeter and nephew of the late Dr. William Budd of Clifton. The deceased was educated at St. Bartholomew's Hospital, London, and qualified as M.R.C.S. Eng. and L.S.A. in 1869. Two years later he commenced practice in Bath and was for several years honorary surgeon to the Eastern Dispensary. Mr. Budd, who was only 55 years of age, had a large practice and was very popular in Bath. The deceased was an enthusiastic grower of roses which he exhibited with great success. The funeral took place at Bathwick Cemetery on Sept. 15th and was attended by nearly all the members of the medical profession in Bath.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. A. Marchand, *agrégé libre* of the Paris Faculty of Medicine.—Dr. Binaud, *professeur agrégé* of the Bordeaux Faculty of Medicine.—Dr. Maeder, Surgeon-General in the German Army and President of the Posen Medical Society.—Dr. Constantin Kowalkowsky, Professor of Hygiene in the University of Warsaw, at the age of 45 years.

Medical News.

UNIVERSITY OF DURHAM.—At the second examination for the degree of Bachelor in Medicine held at the College of Medicine, Newcastle-upon-Tyne, in September, the following candidates satisfied the examiners:—

Anatomy, Physiology, and Materia Medica.—Ernest John Manning, St. Mary's Hospital (Second-class Honours); James Bowden Waters, College of Medicine, Newcastle-upon-Tyne (Second-class Honours); Annie Tombleson Brunyate, London School of Medicine for Women; Stanley Cornell Clapham, M.R.C.S., L.R.C.P., Guy's Hospital; Henry Reginald Ellis, M.R.C.S., L.R.C.P., St. Bartholomew's Hospital; William Morton Emmerson, College of Medicine, Newcastle-upon-Tyne; Ida Emilie Fox and Lucy Selina Molony, London School of Medicine for Women; Robert William Nevin and Monica Lucien Mary Robertson, College of Medicine, Newcastle-upon-Tyne; Thomas Corrie Rutherfoord, St. Thomas's Hospital; Ralph Stuart Renton, College of Medicine, Newcastle-upon-Tyne; Sydney Duke Turner, M.R.C.S., L.R.C.P., St. Thomas's Hospital; Norman Bryan Walker, College of Medicine, Newcastle-upon-Tyne; and Marmaduke Cordeux Wetherell, Guy's Hospital.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Hermann Senator has been appointed Honorary Professor of Internal Medicine and Dr. August Lucae as Honorary Professor of Otology. Dr. Albu has been recognised as *privat-docent* of Internal Medicine, Dr. Erich Bennecke as *privat-docent* of Surgery, and Dr. S. Gottschalk as *privat-docent* of Gynæcology. Dr. Albert Rosenberg has been appointed Professor of Laryngology.—*Budapest:* Dr. Koloman Tellyesniczky has been appointed Assistant Professor of Anatomy.—*Florence:* Dr. Ernesto Lugaro has been recognised as *privat-docent* of Psychiatry.—*Munich:* Dr. A. von

Notthafft has been recognised as *privat-docent* of Dermatology.—*Padua:* Dr. Giovanni Graziani has been recognised as *privat-docent* of Medical Pathology and Dr. Giacomo Luciola as *private-docent* of Ophthalmology.—*Pavia:* Dr. Carlo Forlanini of Turin has been appointed to the chair of Medical Pathology.—*Tubingen:* Dr. Karl Walz has been recognised as *privat-docent* of Pathological Anatomy.—*Turin:* Dr. Bernardino Silva of Pavia has been appointed to the chair of Medical Pathology.—*Vienna:* Dr. Leopold von Dittel has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Würzburg:* Dr. Max von Frey of Zurich has been appointed to the chair of Physiology in succession to Dr. Fick, resigned.

NEW WORKHOUSE INFIRMARY FOR DEVONPORT.—At the meeting of the Devonport Board of Guardians held on Sept. 15th it was stated that the cost of the new workhouse infirmary, which is approaching completion, would be £3900.

ACTION FOR THE RECOVERY OF FEES.—At the Stonehouse (Devon) County-court on Sept. 12th Mr. Elgar Down, L.R.C.P. Lond., M.R.C.S. Eng., sued a man for £2 19*s.* 6*d.* for professional services. The defendant, who had suffered from rheumatism, admitted that he had received medical treatment from the plaintiff but stated that he had been eventually cured by an old woman, a herbalist. His Honour Judge Woodfall gave judgment for the plaintiff for the full amount claimed.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH.—At the South Devon and East Cornwall Hospital, on Sept. 12th, in the presence of a large and influential assembly, the Earl of Mount Edgcumbe presented Sir Massey Lopes with a portrait in oils of himself, painted by Mr. A. S. Cope, R.A. The cost was defrayed by subscription and the presentation was in recognition "of his munificent benefactions and his long and valuable services to the charity." Sir Massey Lopes asked the hospital committee's acceptance of the painting and it will be placed in the board room.

WAGE-LIMIT AT THE CARDIFF INFIRMARY.—At a recent meeting of the Cardiff Infirmary Committee a letter was read from the secretary of the Cardiff Branch of the Bookbinders' and Machine Rulers' Consolidated Union stating that the society had decided to withhold their subscription to the infirmary owing to one of their members being refused treatment in the ophthalmic department. The secretary admitted that the objection raised against the man—namely, that he was in receipt of a weekly wage of 32*s.*—was in accordance with the laws of the institution, but he contended that the law should be altered. It was resolved to inform the secretary that the infirmary was governed by fixed laws and to express a hope that this society would follow the example of similar societies and accept the wage-limit.

PRESENTATIONS TO MEDICAL MEN.—Recently in the board-room of the Great Western Railway station at Bristol the certificates and badges were distributed to the employés of that railway who had successfully passed the examination of the St. John Ambulance Association. Afterwards the members of the class presented Mr. H. Devis, L.R.C.P. Lond., M.R.C.S. Eng., with a bag of surgical instruments in appreciation of his services as honorary lecturer.—At the Dewsbury and District Infirmary, on August 28th, Mr. James Prior, L.R.C.P. Lond., M.R.C.S. Eng., was the recipient of a clock, in oak case, in recognition of his services as house surgeon at the infirmary for upwards of four years. An inscription on the clock reads: "Presented to James Prior by a few friends on his resigning the position of house surgeon of the Dewsbury and District Infirmary, July, 1899."—On Sept. 13th, after the presentation of certificates to the successful candidates of the Port Isaac (Cornwall) Branch of the St. John Ambulance Association, the Rev. A. Barclay, on behalf of the class, presented Mr. R. Julyan George, M.D., C.M. Edin., with a walking-stick, suitably inscribed, in appreciation of his services as honorary lecturer.—On the same day, at the annual distribution of certificates to the successful candidates of the Lostwithiel (Cornwall) Branch of the St. John Ambulance Association, Mr. J. Thomas, J.P., presented Mr. E. Arthur Milner, M.B., C.M. Edin., with a *Times* Atlas as a thank-offering for his honorary instruction to the class.

SANITARY CONDITION OF FALMOUTH. — Dr. G. S. Buchanan, of the Local Government Board, is prosecuting an investigation into the sanitary condition of Falmouth with a view to trace the cause of the typhoid fever epidemic.

LITERARY INTELLIGENCE.—Mr. Romesh Dutt, C.I.E., Lecturer at University College, London, who produced a condensed metrical translation of the *Mahabharata* last year, has now placed in the hands of Messrs. Dent and Co. a similar condensed translation of the other Indian epic, the *Ramayana*. The works are to be issued in Messrs. Dent's Temple Classics Series and an illustrated edition of each will be also separately published. The two books together comprise the entire epic literature of the ancient Hindus and give a complete and graphic picture of ancient Indian civilisation, manners, and life. The metre adopted in both of the works is the metre of "Locksley Hall," which is the nearest possible approach to the rhythm of the Sanscrit *sloka* metre.

TYPHOID FEVER AT EXETER.—At the meeting of the Exeter City Council held on Sept. 13th it was stated that in the recent outbreak of typhoid fever at Exeter 70 out of the 80 cases had been traced to the eating of uncooked cockles at Exmouth. The city analyst had examined the effluent from the mouth of the sewer at Exmouth, where the cockles were gathered, and he had found that it consisted of a mixture of sea water and untreated sewage. It was stated that the sale of the cockles had been stopped at Exmouth but that they were being sent to other towns. Mr. E J. Domville proposed that the Devon County Council should be communicated with in order that an application might be made to the Local Government Board to declare the whole of the estuary of the river Exe a stream within the meaning of the Rivers Pollution Act. After some discussion the motion was carried.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.*

ARMER, A., M.B. Lond., L.R.C.P., M.R.C.S., has been appointed Junior House Surgeon to the Smithdown-road Workhouse by the Toxteth Board of Guardians.

ARMITAGE, E., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been re-appointed Medical Officer of Health by the Grimsby Rural District Council.

BARNES, J. SANDERT, M.R.C.S., L.R.C.P. Lond., L.S.A., has been appointed Junior Medical Officer to the Borough Asylum, Portsmouth.

BROWN, E. ARCHER, M.B. Edin., M.R.C.S., L.R.C.P. Lond., has been appointed Second Assistant Medical Officer to the St. Marylebone Infirmary, Notting Hill, London, vice Dr. Mallins, resigned.

BUCHANAN, R. MCN., M.B., C.M. Glasg., F.F.P.S. Glasg., has been appointed Bacteriologist by the Corporation of Glasgow.

FERRIS, J. S., M.B. Lond., L.R.C.P., M.R.C.S., has been re-appointed Medical Officer for the Denham Sanitary District by the Eton Rural District Council.

FORSYTH, C. E., M.B., Ch.M. Aberd., has been appointed Assistant Medical Officer to the County Asylum, Dorchester, vice G. Hungerford, resigned.

FRASER, H., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer for the Chalvey Sanitary District by the Eton Rural District Council.

HITCHON, H. H. I., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health for the Borough of Heywood.

HOUSLEY, JOHN, M.D. St. And., M.R.C.S., D.P.H. Glasg., has been re-appointed Medical Officer of Health by the Retford Rural District Council.

HUNGERFORD, GEOFFREY, L.R.C.P. and L.R.C.S. Irel., has been appointed Assistant Medical Officer to the Wonford Hospital for the Insane, Exeter, vice Thomas Astbury, resigned.

HUSKIE, J., M.B., C.M. Edin., has been appointed Public Vaccinator and re-appointed Medical Officer for the South Sefton Sanitary District of the West Derby Union.

JENKINS, J. H., L.R.C.P. Edin., M.R.C.S., D.P.H. Cantab., has been re-appointed Medical Officer of Health by the Usk Urban District Council.

JOYCE, R. C., M.B., C.M. Edin., has been appointed Medical Officer to the Standard Colliery, Ynyshir, South Wales.

KENYON, G. A., M.B. Lond., L.R.C.P., M.R.C.S., has been re-appointed Medical Officer of Health by the Hoylake District Council.

MACLEAN, MADGE S., M.B., C.M. Glasg., has been appointed House Surgeon to the Victoria Hospital for Sick Children, Hull.

MILTON, JOHN PENN, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer and Public Vaccinator for the Parishes of Penzance Civil, Penzance-in-Maldrow, and Paul, by the Penzance Board of Guardians.

OWEN, R., L.R.C.P., L.R.C.S. Edin., has been appointed Public Vaccinator for the District of Sefton North, of the West Derby Union.

PEARCE, G. H., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health by the Darton Urban District Council, vice W. White, deceased.

SOLOMAN, CHAS., L.R.C.P., L.R.C.S. Edin., has been re-appointed Medical Officer of Health by the Skirlaugh Rural District Council.

THOMSON, G. D., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health by the Ruskington Urban District Council.

WILLIAMS, W. J., L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Medical Officer to the Carnarvon Isolation Hospital, vice E. H. Williams, deceased.

Vacancies.

For further Information regarding each vacancy reference should be made to the advertisement (see Index).

BETHNAL GREEN NEW INFIRMARY, London.—Medical Superintendent for the New Infirmary, Cambridge Heath, N.E.—Salary £500 per annum, with unfurnished apartments, coals, lights, and washing, but without rations or attendance. Apply to the Clerk to the Guardians, Offices, Bishop's-road, Victoria Park, N.E.

BOROUGH OF MAIDSTONE.—Medical Officer of Health. Salary £200 per annum and £150 a year for water analysis. Apply to the Town Clerk, Maidstone.

BRADFORD ROYAL INFIRMARY.—Dispensary Surgeon, unmarried. Salary £100 per annum, with board and residence.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Pathologist. Salary 100 guineas per annum. Also Assistant Physician. Also Second House Physician for six months. Salary at the rate of £30 per annum, with board and residence.

CUMBERLAND AND WESTMORLAND ASYLUM, Garlands, Carlis'e.—Junior Assistant Medical Officer, unmarried. Salary £100 a year, with board and residence.

DURHAM COUNTY ASYLUM, Winterton, Ferryhill.—Assistant Medical Officer, unmarried. Salary £140, rising by yearly increments to £160, with board, lodging, washing, and attendance.

EGYPTIAN GOVERNMENT SCHOOL OF MEDICINE, Cairo.—Professor of Ophthalmology. Applications to F. G. Hallett, Esq., Secretary, Examination Hall, Victoria Embankment, London.

FRENCH HOSPITAL AND DISPENSARY, 172, Shaftesbury-avenue, London.—Resident Medical Officer, unmarried, speaking French. Salary £80 per annum, with full board.

GOVAN DISTRICT ASYLUM, Crookston, near Paisley.—Junior Assistant Medical Officer. Salary commencing at £100 a year, with rooms, board, attendance, and laundry.

HARRIS PARISH COUNCIL.—Medical Officer and Public Vaccinator for the Southern Division of Harris. Salary £90, other emoluments. Apply to Mr. T. Wilson, Solicitor, Lochmaddy, Clerk.

HEREFORD GENERAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £25 per annum, with board, residence, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium £25 each. Also an Assistant Resident Medical Officer. Salary £100 per annum, with board and residence.

HOSPITAL FOR THE INSANE, The Coppice, Nottingham.—Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, board, attendance, and washing.

HOSPITAL FOR WOMEN AND CHILDREN, Leeds.—Non-resident House Surgeon for six months. Salary at the rate of £125 per annum.

HUDDERSFIELD INFIRMARY.—A Senior House Surgeon and a Junior House Surgeon. Salaries £80 and £60 per annum respectively, with board, lodging, and washing.

LONDON HOSPITAL MEDICAL COLLEGE, E.—Assistant Demonstrator of Anatomy. Salary £90 a year.

LONDON LOCK HOSPITAL, Harrow-road, W.—House Surgeon to the Female Hospital. Salary £50 per annum, with board, lodging, and washing.

LONDON TEMPERANCE HOSPITAL, N.W.—Visiting Physician. Honorarium 50 guineas per annum. Also Resident Medical Officer for one year or more. Salary 100 guineas per annum, and board, lodging, and washing.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY, Loughborough.—Resident House Surgeon. Salary £100 per annum, with furnished rooms, attendance, and board.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £70 per annum, with residence, board, and washing.

OWENS COLLEGE, Manchester.—Junior Demonstrator in Physiology. Salary £100 per annum, rising to £150.

PADDINGTON INFIRMARY, London.—Resident Clinical Assistant and Second Assistant to the Medical Superintendent for six months. Honorarium at the rate of £50 per annum, conditionally, with board, residence, and washing.—Apply to Dr. M. T. Squire, at the Infirmary, 285, Harrow-road, W.

PARISH OF FULHAM, London.—Resident Medical Superintendent of the Infirmary and Medical Officer of the Workhouse. Combined salary at the rate of £300 per annum, in addition to residence (partly furnished), fuel, lights, and washing, subject to statutory deductions. Applications to the Clerk to the Guardians, 75, Fulham Palace-road, Hammersmith, W.

PRESTON ROYAL INFIRMARY.—Assistant House Surgeon. Salary £50 per annum, with board, lodging, and washing, &c.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, London.—Assistant Physician.

ROYAL SOUTH HANTS INFIRMARY, Southampton.—House Surgeon. Salary £100 per annum, with rooms, board, and washing.

SAMARITAN FREE HOSPITAL FOR WOMEN AND CHILDREN, Marylebone-road, London.—Anæsthetist. Honorarium £20 per annum.

SEAMEN'S HOSPITAL SOCIETY, "DREADNOUGHT," Greenwich.—Senior House Surgeon for the Branch Hospital in the Royal Victoria and Albert Docks, E. Salary £75 per annum, with board and residence and an additional £25 per annum conditionally. Apply to the Secretary, Greenwich, S.E.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon for six months. Honorarium at the rate of £50 per annum, and residence, board, and washing.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Assistant House Surgeon for six months. Honorarium £10 10s., with board, washing, and lodging in the hospital.

YORK COUNTY HOSPITAL.—Resident Assistant House Surgeon. Salary £60 per annum, with board, attendance, and washing.

Births, Marriages, and Deaths.

BIRTHS.

BATTLE.—On Sept. 18th, at Harley-street, W., the wife of W. H. Battle, F.R.C.S., of a son.

EVERETT.—On Sept. 8th, at Pitt-street, Norwich, the wife of Ernest W. Everett, M.R.C.S., L.R.C.P., of a son.

FRASER.—On Sept. 15th, at Carlton, Nottingham, the wife of Alexander Fraser, M.B., C.M., of a daughter.

HOPKINS.—On Sept. 16th, at Lynfield, Tenison-avenue, Cambridge, the wife of F. Gowland Hopkins, M.B. Lond., of a daughter.

MACEVOY.—On Sept. 19th, at 41, Buckley-road, Brondesbury, N.W., the wife of H. J. Macevoy, M.D., B.Sc. Lond., of a son.

METCALFE.—On Sept. 16th, at St. Leonards, York, the wife of A. W. Metcalfe, M.A., M.D. Cantab., of a son.

MUMFORD.—On Sept. 18th, at Bartlett's-passage, Holborn-circus, E.C., the wife of Wilfred George Mumford, M.R.C.S., L.R.C.P. Lond., of a son.

SCOTT.—On Sept. 13th, at Surbiton, the wife of W. Jerman Scott, M.B., B.S., of Windsor, of a son.

WALLACE.—On Sunday, August 27th, at his residence, 50, Park-street, Calcutta, the wife of James Robert Wallace, M.D., F.R.C.S., Editor *Indian Medical Record*, of a daughter.

MARRIAGES.

FRENCH—DEACON.—On Sept. 18th, at Christ Church, Lancaster-gate, Louis Alexander French, M.R.C.S., L.R.C.P., of Emperor's-gate, to Florence Elizabeth, youngest daughter of the late Samuel Deacon, of Polebrook Hall, Northamptonshire.

GRIFFITH—WILLIAMS.—On Sept. 19th, at St. Mary's, Risca, Edward M. Griffith, M.D., son of the Rev. E. M. Griffith, Rector of Clocaenog, North Wales, to Muriel, daughter of the Rev. Basil Williams, M.A., Vicar of Risca, Monmouthshire.

HERON—BOWLBY.—On Sept. 12th, at the Parish Church, Downpatrick, co. Down, J. Matthews Heron, M.D., Downpatrick, to Annie Margaret Warner, eldest daughter of Lieutenant-Colonel P. B. Bowlby, Rathdune, Downpatrick.

HOUNSFIELD—PECK.—On Sept. 12th, at St. Pancras Church, London, Sydney Coupland Hounsfield, M.R.C.S., L.R.C.P. Lond., of Stowmarket, to Clara Gayford, third daughter of William Peck, of Winsleys House, Colchester.

MASSIAH—HALLIDAY.—On Sept. 14th, at St. Andrew's Presbyterian Church, Manchester, Benjamin J. Massiah, M.D. Edin., West Didsbury, to Jessie, youngest daughter of James Halliday, Wood Lawn, Fielden-park, West Didsbury.

RICHARDSON-JONES—EVANS.—On Sept. 13th, at Holy Trinity, Chester, by the Rev. R. Richardson-Jones, Rector of Rhydycroesau, Oswestry, father of the bridegroom, assisted by the Rev. T. W. Mundy, B.A., Arthur Trevor Richardson-Jones, M.R.C.S. Eng., L.R.C.P. Lond., to Alice Annie, eldest surviving daughter of J. J. Evans, Esq., Chester.

REYNOLDS—ALLETSON.—On Sept. 14th, at St. Luke's Church, Liverpool, Cecil Arthur Reynolds, M.B., B.Ch. Oxon., eldest son of Henry Reynolds, J.P., of Norton Lodge, Halton, Cheshire, to Elizabeth, eldest daughter of Samuel Alletson, of Liverpool.

SCHARLIEB—TWEEDY.—On Sept. 14th, at St. Andrew's Church, Redruth, Cornwall, Herbert Johann Scharlieb, M.D. Lond., F.R.C.S. Eng., second son of the late William Mason Scharlieb, of the Middle Temple, Barrister-at-law, to Edith, eldest daughter of Charles Tweedy, Esq., of Redruth.

YOUNG—CHAPLIN.—On Sept. 16th, at St. Jude's Church, South Kensington, Henry William Pennyfather Young, B.A., M.B., B.C. Cantab., M.R.C.S., L.R.C.P. Lond., youngest son of the late Thomas Young, of Hadley Lodge, Eastbourne, to Constance Annie, second daughter of the late James H. Chaplin, of Lloyd's.

DEATH.

ROPE.—On Sept. 13th, at Harley-street, W., Henry John Rope, F.R.C.S., of St. Mary's Court, Shrewsbury, in his 82nd year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths

Notes, Short Comments, and Answers to Correspondents.

DUPLICATE NOTIFICATIONS UNDER THE INFECTIOUS DISEASES (NOTIFICATION) ACT.

WE have received the following letter with regard to duplicate notifications under the Infectious Diseases (Notification) Act, a matter that presents difficulties both to the medical man and the public:—

SIRS,—Will you kindly inform me through the columns of THE LANCET of any decisions, with dates, under circumstances similar to the following. A is called to see a patient and reports to the parents and medical officer of health that it is a case of scarlet fever with diphtheritic sore-throat. The parents not being satisfied call in B on the same day who negatives the diagnosis of fever and pronounces the case to be diphtheria and reports the case to the medical officer of health as such. B's diagnosis is corroborated by the child recovering after injection of anti-diphtheritic serum, while another member of the family who was removed from the house immediately after diagnosis was made died from diphtheria. Again, in another case A is called to a patient and diagnoses scarlet fever with diphtheritic sore-throat and reports the same to the medical officer of health. He does not prescribe and refuses to attend the case on the same day. B is again called in and reports the case to the medical officer of health as one of scarlet fever pure and simple. The usual fees were refused to B (the writer) because A's notifications reached the commissioners first. I consider that I was bound to report the cases and was not entitled to assume that they had been reported by A.

I am, Sirs, yours faithfully,

EXANTHEM.

PS.—I enclose a cutting from a newspaper giving the decision of the commissioners and my card.

The newspaper cutting adds nothing to our correspondent's facts, but from it we learn that the medical officer of health held that both medical men were entitled to the notification fees, while one of the commissioners—the case occurred in Scotland—said:—

"The medical officer is only one party. There are nine men round this table who might have different opinions. I have a different opinion, and I hold that the medical men cannot take a double fee for the same case. The case is notified once, and that is all that is required. The medical men might halve the fees. The man that notifies the case first holds the position. Let the party who calls in the second doctor pay him."

Another commissioner said:—

"The parties might call in six medical men. Are we to pay notification fees to each of these medical men?"

It was in the end agreed that only one notification fee should be paid. The medical officer of health's opinion was correct. It has before happened that two or even more certificates of notification are sent to the medical officer of health of a district, the several certificates relating to the same case of infectious disease, and in such instances the sanitary authorities concerned have hesitated to pay more than one fee. The Infectious Disease (Notification) Act is quite clear on the point. It states in Section 3, I. (*b*) that "*every* practitioner attending on or called in to visit the patient shall forthwith, on becoming aware that the patient is suffering from an infectious disease to which this Act applies, send to the medical officer of health a certificate. ....." Multiple certificates must therefore be paid for, if they are sent in, where two or more practitioners are "attending on or called in to visit." The only doubt that can remain is as to the meaning of the words, "attending on or called in to visit.' These words have never received any legal interpretation, and the Local Government Board have announced that they are not empowered to give an authoritative interpretation of Acts of Parliament. But whilst they very naturally take this attitude, they added as follows in a letter to the clerk to the Uppingham Rural Sanitary Authority on Dec. 29th, 1890: "They may, however, state generally that they are disposed to think that a practitioner who sees a patient, not as his medical adviser, but for some purpose unconnected with his treatment, cannot be regarded as [in the words of Section 3, I. (*b*) of the Act] 'attending on or called in to visit the patient'; and he is, therefore, not required to certify or entitled to be paid for a certificate under the Act. If, however, two practitioners are in actual attendance on or are called in to visit a patient, whether at the same period or successively, and their attendance or visiting is connected with the medical treatment of the patient, both are, in strict law, required to send certificates of notification, and these must be duly paid for by the sanitary authority." Also, in another letter at about the same date, the Local Government Board wrote: "If, as a matter of fact, a patient is suffering from a notifiable disease when a medical practitioner is called in to attend on such patient, the fact that a notification in respect of the case has been given by a previous medical attendant (whether such attendant is medical officer of health or not) does not dispense the second medical practitioner from the obligation of certifying." The matter is fully discussed in the small pamphlet published at this office entitled "Difficulties under the Infectious Disease (Notification) Act."

THE HOLDING OF INQUESTS.

WE extract the following from the *Western Morning News*:—

"Mr. E. G. Hamley, county coroner, held an inquest at Little Petherick on Tuesday relative to Annie Spear, aged 15, who had died suddenly while attending to her household duties on Monday. When the jury and coroner met they found the body, in a coffin, had been lodged in the church, which was securely locked. The rector (Rev. Hildebrand Barker) was asked for the key that the jury might view the body, but he refused to give it up. Shortly afterwards, however, he attended before the coroner, gave up the key, and explained that the body was taken to the church because the house in which the girl died was very small, and it would, he feared, be detrimental to the other inmates to keep the body there.—Mr. Barker considered the case was not one for an inquest, as Mr. Marley had been attending it and the doctor had given a certificate. He threatened to report the police constable, Balsdon, to the chief constable for giving notice of the death to the coroner. The jury complained strongly of the rector's conduct in refusing at first to give up the key of the church; and the coroner pointed out that as the girl had died suddenly while at work the constable had done his duty in reporting the case to him."

After hearing evidence, including that of Mr. Marley, the jury returned a verdict of "Death from natural causes." The action of the rector in allowing the body to be placed in the church was no doubt instigated by humane and sanitary motives, but his refusal to allow the corpse to be viewed was illegal, while it was no business of his to decide whether an inquest was necessary or no. This is a matter which rests entirely with the coroner.

AN UNREASONING WOMAN.

AN application was made at Southwark Police-court at the beginning of the week for a magistrate's order under very unusual circumstances. Diphtheria has been prevalent of late in the neighbourhood of Stamford-street (as will be seen by glancing at the analysis of the sickness and mortality statistics for August published in our last issue) and an ambulance was sent to Bennett-street, Blackfriars, to remove to hospital a boy notified as suffering from the disease. The child's parents and their four children were found to be occupying three rooms in a house where other families also had quarters, so that the urgent necessity from the public health aspect of removing the focus of disease was obvious, but the mother violently resisted the removal of her son. The sanitary inspector therefore applied to the magistrate for an order under which the police would enforce the removal and the order was granted. While we may sympathise under many circumstances with a mother's wish to attend her child through his sickness we may still wonder at the unreasonableness of this mother. She had clearly no facilities whatever for nursing the patient through a most dangerous illness, while she was willing to expose the rest of her family and her neighbours to grave risks by her unreasoning distrust of the aid offered her by the community. And, perhaps, not only her neighbours, for we see by an account of the case in the *Evening News* that an elder brother of the sick child was working at a food factory, but has been since suspended.

"SCHOOLS FOR THE DEAF."

IN our issue of Sept. 16th we published a letter from the Rev. F. D. Robinson drawing attention to a school for the education of deaf children. The address of the school was not given, but we have received two letters, the one from a lady and the other from a gentleman, saying that they are certain that the school in question is one with which they are intimately acquainted and where their respective children were educated. One correspondent writing from the North of London says: "I also have known the principal and his wife for many years and can testify to the efficiency of the instruction given and to the home comforts received by the pupils. I should be deeply grieved for this school to be closed for want of support, and if any word of mine can prevent it I shall be most pleased to give all information in my power." The other correspondent, who writes from Yorkshire, speaks equally highly of the school and expresses her willingness to act as a reference.

CHLOROFORM ANÆSTHESIA—A QUERY.

To the Editors of THE LANCET.

SIRS,—Will you or any of your readers skilled in the administration of chloroform be kind enough to give an opinion as to whether giving this anæsthetic by means of Krohne and Sesemann's modification of Junker's inhaler can be described as a "closed method" of administration? I have been using this method for the last 12 months without any trouble, but a death has occurred in an adult without any obvious reason and it is thought that possibly the method employed was at fault. We have now reverted to the old method, using a flannel mask with a towel thrown over it owing to the rapid evaporation which takes place out here. I am anxious for an opinion on the two methods as I was hitherto much in favour o the inhaler. It seems to me that this latter method gives quite

sufficient air as the face-piece never fits very accurately and air enters freely through the feather-piece. Perhaps at the same time a criticism might be offered on our method of preparing patients for operation. The bowels are well opened on the morning and they are kept without food, save a glass of milk or a cup of beef-tea, for from 18 to 20 hours previously. Is this too long a fast or not?

I am, Sirs, yours faithfully,

Hong-Kong, August 19th, 1899. J. BELL.

*** It is generally conceded that although Junker's plan of giving chloroform falls under the denomination "closed method," yet it is at least as safe as the use of a flannel mask and a drop bottle. Many regard it as safer, especially if, as our correspondent suggests, the flannel mask is covered by a towel. We do not, however, consider that the vulcanite face-piece with Krohne's feather respiration indicator is so good as the face-piece made by the same firm which consists of a Skinner's mask so arranged that the delivery tube of the Junker's apparatus can be fitted on to the framework of the mask. A still better arrangement is to replace the Skinner's mask by a glass one arranged to receive the delivery tube from Junker's inhaler. The patient, unless robust, should not fast for more than six hours. This rule, however, does not apply to patients who are operated on early in the morning; in their case a cup of boiled milk or beef-tea should be given four hours before the anæsthetic unless they are very vigorous. In the case of children a very prolonged fast is certainly not devoid of danger.—ED. L.

ON HER MAJESTY'S SERVICE.

To the Editors of THE LANCET.

SIRS,—Last night I was called out to a drunken virago at 1.30. I had to remove a stocking saturated with questionable fluid from her limb, diagnose and put up a fracture in splints and bandages, and see to the patient's safe removal to the hospital by the police. And all for the magnificent fee of 7*s.* 6*d.*, which fee would have been further reduced to 3*s.* 6*d.* if between 8 A.M. and 10 P.M. How can we hope to get decent remuneration from the public when Government treats us thus? I am, Sirs, yours faithfully,

Sept. 19th, 1899. A. S. M.

A HAPHAZARD METHOD.

AN evening paper reports the case of a schoolboy who was taken ill suddenly with vomiting and diarrhœa. His parents went to see a medical man and, explaining the boy's symptoms, obtained some medicine for him. The boy got worse and eventually died without ever having seen the medical man. According to the evidence given at the inquest death was due to collapse as the result of gastro-enteritis and a verdict to this effect was returned, the jury adding a rider condemning the practice among medical men of prescribing for patients whom they have never seen. We quite agree that to do so is a haphazard method attended with the greatest danger. But it is not a habitual practice among medical men. On the contrary, so certain to be unsatisfactory are the results of treating a patient upon the strength of a lay report of the symptoms that under all ordinary circumstances medical men refuse absolutely to give this form of assistance though they are often urgently asked for it.

DANGERS OF THE KINEMATOGRAPH.

WE are glad to find that in the annual report of the Theatres and Music Halls Committee of the London County Council reference is made to the ever-present possibility of serious accidents in connexion with kinematograph or biograph exhibitions. The moving panorama shown on the screen is the resultant of a vast number of pictures carried on a transparent film of celluloid which is only a few inches wide but may be of any length up to a mile or more. This film is extremely inflammable and on any casual overheating or contact with a light it immediately produces a burst of flame. Many serious accidents have originated in this way. An awful calamity took place at a charity bazaar in Paris on May 4th, 1897, where kinematograph pictures were exhibited and the ignition of the tarred roof of a temporary structure caused the loss of 170 lives in a few minutes. Shortly after that event (THE LANCET, May 29th, 1897, p. 1481) we expressed the opinion that all kinematograph displays in public should be subjected to rigid inspection and control, and we therefore strongly approve of additional powers in this respect being conferred on the London County Council and similar local authorities.

TO MEDICAL FREEMASONS.

To the Editors of THE LANCET.

SIRS,—Give me space to point out to brother masons that amongst the candidates for election to the Royal Masonic Institution for Girls is Iris Douglass, the daughter of a deceased member of our profession, and to suggest to those medical brethren who have votes or can influence them that they should support her solidly and endeavour to secure her election, as our profession has none too many helps of the kind. I am, Sirs, yours faithfully,

Sept. 14th, 1899. P. M.

"THE LABOURER IS WORTHY OF HIS HIRE."

IN THE LANCET of June 24th we commented upon the evidence, the remarks of the coroner, and the verdict of the jury given at an inquest held at Compton, Surrey. A medical man in this case had refused to attend because he had not been paid upon a former occasion. To which the coroner observed that he did not wonder, and the jury returned a verdict in accordance with the medical evidence without holding up to execration as a hard-hearted monster the medical man who had refused to attend. At Scarborough, however, a different feeling prevails and according to the report of the proceedings given in the *Westminster Gazette* of Sept. 19th the following scene occurred. The inquest was to inquire into the death of a boy, aged 12 years, and—

"Considerable indignation was caused by the evidence respecting the conduct of a certain Dr. —— who when roused in the middle of the night to attend the boy declined to do so. The coroner said of course a doctor was not obliged to go when called upon. A Juryman: Is a parent obliged to call a doctor? The Coroner: Yes. If he did not do so he is censurable. The Juryman: Then a doctor is censurable. Mr. Robinson (a juryman): I think it is a disgrace to the town. The Doctor: I practise my profession not for philanthropic motives. Mr. Robinson: You will attend the rich but not the poor. The Doctor: I have been called up several times lately and have received no fee whatever. Mr. Dodds: You must run risks like everybody else. Mr. Robinson: It is a disgrace to the town. Another Juryman: No, not to the town, to the medical profession, as represented by Dr. ——. Mr. Robinson: He is a town official. Mr. Dodds: He doesn't even say he is sorry. Mr. Dodds: The child has died, and you might have prolonged his life. Eventually the jury returned a verdict 'that deceased died from effusion of blood on the brain,' which was the opinion of the doctor, and added a rider 'That it was greatly to be regretted that the doctor had refused to attend for so mercenary a reason.' The coroner said it was greatly to be regretted such a thing had happened and the doctor at the conclusion of the inquest said he was also sorry."

This is an example of the stupid and malignant innuendoes which are often made against medical men by unthinking and ignorant people. As we have frequently said on previous occasions, we do not believe there is an instance on record where any medical man has refused to attend in a case of real or supposed urgency. And why should a medical man be the only member of the community who is to be at everyone's beck and call for in many cases nothing? As the coroner at the Surrey inquest, to which we have referred above, put it with homely frankness: "If you owe a doctor money I do not see why he should come more than anyone else. If you owe a butcher money for a leg of mutton he would not let you have another, would he?" In the Scarborough case the reported evidence does not show whether the parents of the boy owed Dr. —— any money, but whether this be so or not it does not affect the main argument which is this: a medical man is not the servant of the population at large; he has a perfect right to refuse to go or to go just as he likes, except, we would add, in a matter of urgency, and even so the compulsion is moral and not legal.

WANTED A HOME FOR A MENTALLY DEFICIENT LAD.

To the Editors of THE LANCET.

SIRS,—Can any reader kindly inform me if there be any institution in London where a boy, aged 12 years, who is mentally weak, not deaf but nearly dumb, can be taken in and taught a trade? At school he does not make any progress and after a consultation it was decided to be the best course to put him to some trade.

I am, Sirs, yours faithfully,

H. B. A. PEARSON.

36, Honeywell-road, Wandsworth Common, S.W., Sept. 20th, 1899.

Earnest Inquirer writes: "Can anyone give, or say where to obtain, information as to how an appointment as port medical officer can be secured or any appointment in the sanitary service connected with shipping?"

Wary has not made a very clear statement. One and a half year's purchase of a share is not an excessive price to pay where the senior partner remains and is bound up with the new man in the welfare of the practice. Our correspondent fails to note that the position of partner is stronger than that of assistant inasmuch as a partner cannot be dismissed but must be bought out. Of course, the sum to be paid as one and a half year's purchase of any given share will be fixed by the books and other evidence, not by a verbal estimate of probable profits.

Dr. A. W. Miller.—The "rubbish" has been brought to our attention before. To notice it is only to advertise the man whose appeals to the public are largely grounded on the fact that he does not agree with the views of the profession from which he has been removed.

Veritas.—The giving the certificate is a question of conscience simply. There is no right or wrong in the matter; the point is one which must be left to the medical man for his own decision.

Practitioner will much oblige us by appending to his letter an address where answers will find him, so that replies can reach him without our intervention.

J. E. O.—The communication is not suitable to our columns.

A. S.—We have nothing to add to our previous comment.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 21st, 1899.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Sept. 15	30·05	NNW	...	105	70	52	53	57	Cloudy
,, 16	29·55	WNW	0·24	101	65	55	55	58	Cloudy
,, 17	29·75	N.W.	0·08	97	69	53	57	61	Fine
,, 18	29·70	W.	...	102	65	52	53	57	Cloudy
,, 19	29·77	W.	0·06	91	65	55	52	57	Dull
,, 20	29·62	N.W.	0·20	106	62	50	50	53	Fine
,, 21	29·87	WNW	...	101	63	46	47	49	Fine

During the week marked copies of the following newspapers have been received: *Morning Herald, Daily Chronicle, Hertz Observer, Western Daily Press, Newcastle Daily Chronicle, Liverpool Daily Post, Iron and Coal Trades Review, Fish Trades Gazette, Blackburn Weekly Standard, Illustrated Carpenter and Builder, Citizen, Westminster Gazette, Scotsman, Daily Telegraph, Builder, Country Life, Northern Daily Telegraph, Malton Gazette, Boston Independent, Times of India, Pioneer Mail, Leeds Mercury, Architect, Redditch Indicator, Yorkshire Post, Surrey Mirror, City Press, Bristol Mercury, Birmingham Daily Gazette, Scarborough Post, Brighton Gazette, Wigan Observer, Birmingham Daily Post, Manchester Courier, Presbyterian, Peterborough Express, Dublin Express, Sanitary Record, Nottingham Guardian, Eastern Morning News, Mining Journal, Reading Mercury, Kent and Sussex Courier, Freeman's Exmouth Journal, Local Government Journal, Hertfordshire Mercury, Surrey Advertiser, Local Government Chronicle, Essex Weekly News, Dorset Record, Shrewsbury Chronicle, Hereford Times, Shields Morning Mail, East Anglian Daily Times, Weekly Free Press and Aberdeen Herald, Retford, Worksop and Gainsborough News, Fifeshire Advertiser, &c., &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (25th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M.).

TUESDAY (26th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Royal Ear (3 P.M.).

WEDNESDAY (27th).—St. Bartholomew's (1.30 P.M.), University College, (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), Cancer (2 P.M.).

THURSDAY (28th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), St. Mark's (2 P.M.).

FRIDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M. and 6 P.M.).

SATURDAY (30th).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (9.15 P.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), London Throat (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1899, which was completed with the issue of June 24th, and the Title-page to the Volume, were given in THE LANCET of July 1st.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1899 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them. Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

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The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

Communications, Letters, &c., have been received from—

A.—Dr. T. D. Acland, Lond.; Messrs. Allen and Hanburys, Lond.; Allôné Co., Teddington; Dr. J. Althaus, Lond.; Anon.

B.—Mr. G. F. Blake, Dublin; Mr. J. R. de C. Boscowan, Truro; Sir J. Crichton Browne, Lond.; Dr. J. Blumfeld, Lond.; Major R. W. Barnes, R.A.M.C., Mylor; Mr. R. Bevan, Lond.; Dr. A. Brenchley, Lond.; Mr. A. Benthall, Lond.

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D.—Paul R. Derrick Advertising Agency, Lond.; Mr. H. Dodd, Birsay; Messrs. J. Defries and Sons, Lond.; Dr. Morgan Dockrell, Lond.; Durham University College of Medicine; Mr. L. S. Dudgeon, Lond.

E.—Exanthem, Saltcoats.

G.—Surgeon C. B. Gittings, R.N., Chatham; Mr. H. Gibbins, Lond.; Mr. W. F. Gardner, Lond.

H.—Mr. W. H. Haw, Barberton; Dr. J. M. Hobson, Croydon; Hereford General Infirmary, Secretary of; Mr. J. Heywood, Manchester; Mr. H. Holden, Lond.; Professor Hughes, Lond.

I.—*Indian Medical Record*, Calcutta, Manager of.

J.—Messrs. W. Judd, Ltd., Lond.; J. H. R.

K.—Dr. R. Knight, Edinburgh; Dr. C. S. Kilner, Bury St. Edmunds.

L.—Dr. J. A. Lindsay, Belfast; Dr. T. H. Livingstone, Rochdale; Loughborough Hospital, Secretary of; Leeds Hospital for Women and Children, Secretary of; Dr. J. N. Langley, Cambridge; London Hospital, House Governor of.

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N.—Mr. V. H. Norman, Great Yarmouth.

O.—Mr. J. R. O'Brien, Great Yarmouth; Dr. O'Conor, Buenos Ayres.

P.—Dr. W. A. Potts, Birmingham; Plumbers' Company, Secretary of; Preston Royal Infirmary, Secretary of; P. M.; Patent Sanitary Convenience Cover Co., Lond.; Mr. L. Powell, Ashwick; Mr. H. B. A. Pearson, Lond.

Q.—Quinsy.

R.—Mr. R. J. Reid, Lond.; Royal College of Physicians, Registrar of; Messrs. Reynolds and Branson, Leeds; Messrs. Robertson and Scott, Edinburgh; Royal Aquarium, Managing Director of.

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W.—Dr. J. K. Warry, Lond.; Mr. J. P. Walker, Rochdale; Messrs. J. Wright and Co., Bristol; Mr. J. Williams, Bradford.

Letters, each with enclosure, are also acknowledged from—

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